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IMPROVED THEORY

—AND—

PRACTICE OF MEDICINE,

BY A. H. DAVIS, M. D.

This new Medical Work has been recently published by the author, and is one that bids fair to furnish a new era for this age, in point of effecting a unity of ideas in the medical world in relation to the causes of diseases and indications of cure.

The authors undertaking for this work, aspired to solve the many systemic laws that govern each department that contributes to the divinely designed work of chemically perfecting elements in the ganglionic and circulatory transit elaboratories indispensible to the perpetuity of life.

How well he has succeeded in this undertaking, a perusal of the work will reveal. The most important discoveries, leading to a better solusion of the causes of the various systemic derangements, are—a full and satisfactory solution of the functional uses of the nervous system in supporting nutrition. Secondly the transfer of the blood from the arterial to the venous capillaries is found to be dependent upon the chemical evolutions supporting Nutrition. The cause of the periodicity of chills and fever.—The uses of the spleen and supra-renal capsules of the Kidneys; and that of the Aracnoid membrane of the Brain. The philosoply of Respiration, Haermatization of the discs of the globules of the arterial blood.—Peristaltic motion in the small intestines,—Chyliferous absorption,—Of sleep and conscious reaction; Of the systemic effort used to resume suspended Nutrition, etc.

The treatises upon the various diseases are philosophical and interesting, based as they are, upon these important discoveries which furnish much valuable light upon the causes of disease and indications of cure.

In this work it is clearly shown that arterial plethora, congestion and inflammation to be dependent upon a suspension of Nutrition. Congestion may be general or local;—when it is general it is due to the blood becoming too impure to support the chemical combustion required in Nutri-

tion; when local the defective nutrition that induces the congestion, is due to obstructed circulation in the nerves at their spinal transits. Hence in the general suspension of Nutrition we find the direct cause of congestive fevers; in the local, Pneumonia, and all the diseases that arise from spinal congestion. From deficient Nutrition comes arterial plethora that induces an enlargement of the spleen, congestion of the membranes of the Heart, Dropsy of the chest, Bleeding of the Lungs, Consumptive decline, Neuralgia, etc. There are many other discoveries contained in the work, of much interest, too numerous to be described in this short notice. From the aid of these discoveries we are able to define the causes of fevers and a majority of other systemic derangements, and advise their successful mode of treatment so clearly as to enable any intelligent person to treat their families succesfully.

The work contains a minute and full description of every organ and part of the system, and is written in as plain English language as possible, it being designed to be used as a reliable Guide to Health. The work contains a full catologue of diseases the symptomes of which are plainly described, also their causes and successful mode of treatment. Botanical remedies only advised;—it also contains an extensive Botanical Materia Medica, each article of which is historically described, medical properties, uses, and quantity of doses given.

The work will not fail to receive from intelligent physicians the merit properly due to its interesting discoveries; while persons possesing a copy will find in its teachings the means of preserving health and prompt relief from attacks of disease by the use of the simple but efficient remedies advised. No person can afford to be without a copy. Call for Dr. A. H. DAVIS' Improved Theory and Practice of Medicine. Octavo, bound in cloth, and sent to any address, postage free, upon the receipt of a Postal order for $2.50.

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IMPROVED

THEORY AND PRACTICE

OF

MEDICINE,

DEDUCED FROM

Forty Years Successful Practice,

BY

A. H. DAVIS, M. D.,

Prof. of Clinical Medicine in the New York Central Eclectic Medical College now Located in Philadelphia.

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INTRODUCTION.

THIS medical work embraces important discoveries of systemic laws that have not been brought out by any previous author. For the want of this important knowledge, many of the derangements of the human system have been incomprehensible and left to conjecture; hence the great variety of opinions of the causes of disease, and modes of treatment, that have divided the profession into many pathies. But with the full elucidation furnished by this work of the offices the nervous system subserves in supporting nutrition, and the functional work of the vital organs, also the causes of congestion, inflammation, and febrile action, the various systemic derangements are thus rendered satisfactorily clear to every intelligent mind. These abnormal conditions of the system when thus comprehended, suggest the remedial agents and the proper course of treatment to pursue to furnish relief. By these discoveries in the pathology of disease—pneumonia, scarlet fever, diptheria, cerebro-spinal meningitis, congestive, typhus, and yellow fevers, lose all their formidable character, and become simple diseases that readily yield to this mode of treatment. So generally successful has been this treatment in these diseases, that the author has not failed to treat them successfully for over thirty-three years. This medical work has been carefully written and systematically compiled in order to educate a person in the order of procedure of every systemic

law, so as to render a person competent for careful family treatment. The author, in preparing this work, has condensed it so as to place it within the reach of all, and offers it to the public with a sanguine assurance of its valuable contribution to medical science, and means of securing health and longevity to the family circle; also a saving of much wealth that may be used for educational culture and family aggrandizement. Health is not only the source of wealth, but it inspires confidence to undertake in great enterprises.

ANCIENT MEDICAL HISTORY.

VIS MEDICATRIX NATURÆ; OR, THE RECUPERATIVE LAWS OF LIFE.

In the state of health the various functions are executed in a regular and harmonious manner, and are intimately connected by consent or sympathy; but, if a morbific cause impresses the organism, this harmonious condition is disturbed; a fresh series of actions results; and disorder supervenes. Physiologists have noticed in every living body an instinctive action—an action of the living principle, manifestly directing its operations to the health, preservation, or reproduction of a living frame, or of any part of it. This applies to the plant as well as to the animal. It is the *vis medicatrix naturæ* for and against which so much has been said; but which, if restricted to the operation we have mentioned, can no more be denied than the existence of life, of which we know nothing except by its results. It is strikingly witnessed in the reparatory power exerted by living bodies after the receipt of an injury. If we tear a branch from a tree, we find that the injury done to the parent trunk is repaired by an action analogous to that set up by the animal whenever a wound is inflicted upon it.

In some vegetables the reparatory power is so energetically exerted that the lost parts are restored; and it is upon this plan that the utility of certain garden vegetables—spinach, parsley, cress, etc., reposes. Such a reparatory power is occasionly, but rarely, met with in the animal kingdom. We see it in the lobster, deprived of its claw, and in the serpent that has lost its tail. The nails and hair, too, regain their accustomed length when cut; and the same thing happens to the teeth of the Rodentia or gnawers. But few animals, however, possess to any extent the power of restoring lost parts; but all are capable of repairing injuries and removing disease, when it is

within certain limits. In cases of wounds and broken bones, the efforts of the surgeon are chiefly restricted to keeping the parts in apposition, and to preventing the intrusion of internal and extraneous irritants, while his reliance is placed on those sanitive powers that reside within the system to perpetuate the living frame in times of health, to recuperate the injured parts. No longer ago than the seventeenth century, the recuperative powers of the system were so poorly understood as to ascribe the restoration of wounds to the unguents applied to the sword or instrument that inflicted the wound. This doctrine was advocated by the Rosicrucians, and it obtained universal credence in that age. It was first employed at Florence, in the commencement of the seventeenth century, by a Carmelite monk, who had just returned from India. The Grand Duke, hearing of the monk's marvelous cures, asked him for his secret, which he refused, fearing that the Duke might divulge it. Some time afterwards Sir Kenelm having rendered an important service to the monk, the latter, out of gratitude, communicated to him the composition of the powder, and Sir Kenelm took the secret with him to England. An opportunity soon occurred for testing its efficacy. A Mr. Howell, having been wounded in attempting to separate two of his friends who were engaged in a duel, was subjected to its employment. Four days after the infliction of the wound, Sir Kenelm dipped one of Mr. Howell's garters in a solution of the powder, and immediately, it is asserted, the wound, which was particularly painful, became easy; but as the garter grew dry, the pains returned, and were relieved by a fresh immersion of the garter in the solution. In five or six days the wound healed. James the First, his son—afterwards Charles the Second—the Duke of Buckingham, and all the principal personages about the court, were acquainted with the circumstances of the case; and James, whose enthusiasm was not counter-balanced by much judgment, and who was, withal, superstitious in the highest degree, obtained the secret from Sir Kenelm, and performed most astonishing cures. In no great length of time the composition transpired, and, as in all like cases, the charm evaporated with the disclosure. The powder employed by Sir Kenelm is asserted to have been sul-

phate of copper prepared in a particular manner. Some affirm it to have been the ordinary green vitriol of commerce (sulphate of iron.)

Dryden alludes to the superstition more than once in his "*Tempest, or Enchanted Island.*" Thus Ariel:

> "When I was chided by my mighty lord,
> For my neglect of young Hippolito,
> I went to view his body, and soon found
> His soul was but retired, not sallied out;
> Then I collected
> The best of simples underneath the moon,
> The best of balms, and to the wound applied
> The healing juice of vulnerary.
> His only danger was his loss of blood;
> And now he's waked, my lord, and just this hour
> He must be dressed again as I have done it;
> *Anoint the sword, which pierced him with this weapon salve, and wrap it close from air, till I have time to visit him again.*"
> [Act V, Scene 2d.]

[And Miranda, when she enters with Hippolito's sword wrapped up.]

HIPPOLITO.—O, my wounds pain me.

MIRANDA.—[*She unwraps the sword.*] I am come to ease you.

HIP.—Alas! I feel the cold air come to me. My wound shoots worse than ever.

MIR.—[*She wipes and anoints the sword.*] Does it still grieve you?

HIP.—Now methinks there's something laid just upon it.

MIR.—Do you find no ease?

HIP.—Yes, yes; upon a sudden all this pain is leaving me. Sweet Heaven! how I am eased. [Act V, Scene 2d.]

It is likewise referred to in the third canto of the "*Lay of the Last Minstrel,*" of Sir Walter Scott.

The sympathetic ointments applied to the weapon, or the "armatory unguents," as they were termed, are of various characters, containing the absurd, disgusting, and often inert ingredients. The following extract from the "Sylva Sylvarum," or "Natural History," of Lord Bacon, strikingly exhibits this. The mode of managing the wound sufficiently accounts for the good effects ascribed to the cure by sympathy:

"It is constantly avouched and received that the anointing of the weapon that maketh the wound will heal the wound itself. In this experiment, upon the relation of men of credit, though myself, as yet, am not fully inclined to believe to it,

you shall note the points following; first, the ointment, with which it is done, is made of divers ingredients, whereof the strangest and hardest to come by are the moss upon the skull of a dead man unburied, and the fats of a boar and a bear killed in the act of generation. These two last I could easily suspect to be prescribed as a startling hole, that, if the experiment proved not, it might be pretended that the beasts were not killed in the due time; as for the moss, it is certain that there is a great quantity of it in Ireland, upon slain bodies, laid in heaps unburied. The other ingredients are the blood stone in powder, and some other things, which seem to have a virtue to staunch blood, as also the moss hath. And the description of the whole ointment is to be found in the clinical dispensatory of Crollius; secondly, the same kind of ointment, applied to the part itself, worketh not the effect, but only when applied to the weapon; thirdly, which I like well, they do not observe the confecting of the ointment under any certain constellation, which commonly is the excuse of magical medicines when they fail, that they were not made under a fit figure of heaven; fourthly, it seemeth that the imagination of the party to be cured is not needful to concur, for it may be done without the knowledge of the party wounded; and thus much has been tried, that the ointment, for experiment's sake, hath been wiped off the weapon without the knowledge of the party hurt, and, presently, the party hurt has been in great rage of pain till the weapon was re-anointed; sixthly, it is affirmed that if you cannot get the weapon, yet if you put an instrument of iron or wood resembling the weapon into the wound, whereby it bleedeth, the anointing of that instrument will serve and work the effect. This, I doubt, should be a device to keep this strange form of cure in request and use, because many times you cannot come by the weapon itself; seventhly, *the wound must be at first washed clean with white wine, or the party's own water;** *and then bound up close in fine linen, and no more dressing be renewed till it be whole;* eighthly, the sword itself must be wrapped up close, as far as the ointment goeth, that it take no wind; ninthly, the ointment, if you wipe it off from the sword and keep it, will serve again, and rather increase in virtue than diminish; tenthly, it will cure in far shorter time than ointments for wounds commonly do; lastly, it will cure a beast as well as a man, which I like the best of all the rest, because it subjecteth the matter to an easy trial."

The lines in the above quotation marked in italics are the key to the solution of the whole mystery. Indeed, it is the

*This wash is poisonous to the wound and discarded by surgeons.

practice adopted at the present day in the treatment of incised wounds; and to this, not to the influence of the sympathetic powder or armatory unguent, must the main curative agency be ascribed, while a portion may be assigned to the mental revulsion produced on the sufferer, through his faith in the virtues ascribed to the application. The wound was carefully defended from the irritation of extraneous substances, and given up to that instinctive principle, which we have seen repairs the injuries to which organized bodies are liable. And it has been suggested that the results furnished the first hints that led surgeons to the improved practice of healing wounds by what is technally called the "first intention." The existence, then, of such an instinctive power, can neither be denied nor lost sight of in the treatment of disease. (The error has been that undue weight has been attached to it, so that the practitioner was altogether guided by its manifestations—or fancied manifestations—in laying down his indications of cure.)

MEDICAL HISTORY.

The history of medicine from its origin to the beginning of the nineteenth century. Abridged from Renouard's History of Medicine.

At the death of the patriarch, Jacob, 1700 years before the birth of Christ, Egypt possessed men who practiced the art of medicine. This passage in the writings of Moses, is the most ancient authentic monument that we possess of the Healing Art. All that is more remote in the history of Egypt and of other nations, is enveloped in uncertainty and obscurity so far as medicine is concerned. We read in the Books of the Hebrews that when Abraham was constrained by famine to leave the land of Canaan, he entered Egypt, where he found an abundance of everything to nourish his household and his flocks. At this epoch, which preceded the death of Jacob 230 years, Egypt rejoiced in a very advanced state of civilization. Agriculture, geometry, architecture and metalurgy, had all then made a remarkable progress. I shall pass rapidly over the medical mythology of these early ages, and only state what is necessary to convey the early ideas they had of disease, the methods used by them in the healing art, and to show how

hard these pioneers in medicine had to struggle without the light of science to advance the art of healing. In the most ancient library of Egypt that treated upon all subjects, which was dedicated to Thermes, six volumes treated of medicine, which embrace a body of doctrines complete and well arranged. The first treated of anatomy, the second of diseases, the third of instruments, the fourth of remedies, the fifth of diseases of the eye, and the last on diseases of women. It must be agreed that this distribution was very methodic These writings are doubted as being the work of the ancient Egyptian priests; some think they were the work of a writer of the Alexandrian school, for it was about the epoch of the founding of that city that anatomical researches and medical philosophy began to flourish. Nevertheless, the description that M. Houdart gives of the progressive march of the science in Egypt, and, in particular, the method followed by the priests in the practice of medicine, is both interesting and instructive. It is not necessary, he adds, to suppose that medicine reached suddenly in Egypt this degree of perfection. As was common among other people of high antiquity, they commenced in the first place, as we learn, from Strabo, by exposing the sick in public, so that any of those who passed by, who had been similarly attacked and cured, might give their advice for the benefit of the sufferers. According to Herodotus and Strabo, the same usage appears to have existed among the Babylonians and Lusitanians. At a later period, this plan was much better calculated to accelerate the progress of the art; for all who were cured of disease were required to go and make an inscription in the temples, of the symptoms of their disease, and the curative agents which had been beneficial to them. The temples Canopus and Vulcan at Memphis, became the principal depots of these registers, and they were kept with the same care as the archives of the nation. For a long time every one had the privilege of going to consult them, and of choosing for his sickness or that of his neighbors the medicament of which experience had confirmed the value. This method was very good, notwithstanding its inconveniences, to advance science, because it rested entirely upon observation. In this way, must have been collected a prodigious

quantity of facts, from which might be deduced correct principles in the practice of medicine, and indeed was brought about. The priests who were charged with the study of these observations, did not hesitate to seize upon the exclusive practice of the art, and when they had collected a great mass of facts, they formed a medical code—the fruit of the experience of ages—which is call by Diodorus of Sicily, the Sacred Book, from the directions of which they were never permitted to vary. It was doubtless this code that was afterwards attributed to Thermes that made up the collection spoken of by Clement, of Alexandria, and which the Pastophoses followed in the practice of medicine. If, in following the rules there laid down, they could not save their patient, they were not held responsible; but, according to Diadorus of Sicily, they were punished with death if, after departing from them, the result did not justify their course.

MEDICINE OF THE HEBREWS.

The sacred writings of the Jews furnishes us with the state of intelligence acquired by them and the surrounding nations, at the time in which they were written, more perfectly than can be derived from profane history. The sacred history states positively, that Moses, having been rescued from the river by one of the daughters of Pharaoh, was reared in the court of that prince and instructed in all the knowledge of the Egyptian priesthood, in which he became a proficient. On this account, when he presented himself before his sovereign, to demand in the name of the God of Israel the freedom of his people, who had been reduced to a cruel servitude for nearly 200 years, he was not at all embarrassed by the prestiges of the magicians and savans so frequently summoned by Pharaoh to meet him in his palace, for he was able to confound them all with his superior abilities. Moses found a demand for all this knowledge in governing and looking after the health and comfort of his people, and in all the hygienic rules instituted, his sagacity was not directed to, nor made mention of, physiological laws or the pathology of disease, or any remedial agents to relieve the sick. It appears that all classes of disease were considered to be a punishment at the

hands of God for the breach of some moral law; and Moses directed that a specific article corresponding to the derangement be given to the priest for a sin offering, for which they expected to receive a forgiveness of the sin, and thereby find relief. This idea obtained among the Jews in the days of Jesus, which may be inferred from his remark: "Thy sins are forgiven; take up thy bed and walk." From Moses' writings we may infer that the Egyptians at that time were as ignorant of the laws of the human system, the pathology of disease and medicinal remedies, as was Moses, and at this time Egypt was more advanced in science and art than any of the surrounding nations.

THE GREEKS.

Medicine among the Greeks during the primitive period.

Greece, which will hereafter furnish us the most interesting and best preserved debris of the healing art of the ancients, does not give us, in regard to the history of this science during the ages that precede the Trojan war, anything more than dim lights and tradition stamped with a fabulous character, and often borrowed from other nations. The learned and modest Daniel Leclerc, details at great length her medical mythology; he names more than thirty gods or goddesses, heroes or heroines, who were supposed to have invented or cultivated with distinction, some of the branches of medicine. He interrogates successively, history, poetry, chronicles and inscriptions; he neglects nothing in the hope of shedding some light on the chaos of improbable or contradictory traditions; but his praiseworthy though unfruitful efforts have not drawn from them any valuable truths nor well-established facts. Sprengel, who undertook the same task 200 years later, with Germanic patience, has only succeeded in displaying a vast and confused erudition. It would then be temerity on my part to enter into a labyrinth where men of such great wisdom have lost themselves. I shall content myself by extracting from some of these fabulous legends a few anecdotes, and some of the best credited names, that have become common knowledge, and which a physician ought to know, or suffer the imputation of ignorance, of the history of his profession.

Melampus is the first of the Greeks, following the chronological order, who immortalized himself by extraordinary cures, and to whom, from gratitude, altars were erected. He lived in the time of Prœtus, King of Argos, nearly two hundred years before the Trojan war. The most famous of the cures attributed to Melampus were those of the daughters of Prœtus. These princesses, who had taken vows of celibacy, became subject to fits of hysteria or monomania, during which time they imagined themselves transformed into cows, and would leave the palace to run wild in the forest, lowing like those animals. This nervous affection was communicated sympathetically to other women of Argos, who followed their practices, imitating their deranged conduct. The shepherd Melampus, having observed that his goats purged themselves with white hellebore, gave his young patients milk in which this plant was infused, then caused some robust young boys to chase them over the fields until they were thoroughly fatigued. Then he dressed one of his boys in the shape of a varmint, and enchanted them in the belief that it had come to take their malady and carry it away, never to return, then made them bathe in a fountain in Arcadia called *Clitorian*, which completed their cure. In pay for so great a service Prœtus offered to Melampus the hand of one of his daughters with the third of his kingdom. The shepherd showed on this occasion as much fraternal affection as medical perspicacity, for he would not accept the offer except on the condition that his brother Bias should have a reward equal to his own.

Chiron is less illustrious in the great acts that he performed than in the pupils he reared. He held his school in a grotto in Thessaly, and, if the chronicle may be believed, no philosopher of antiquity, no professor in modern times, could count in his audience as many celebrities as the Centaur saw in his cave. A majority of the heroes who distinguished themselves at the capture of the fleece of gold, or in the Trojan war, boasted of having been his disciples. Among these are enumerated Hercules, Jason, Castor, and Pollux, the subtle Ulysses, the fiery Diomedes, the prolix Nestor, the pious Æneas, and the invincible Achilles. The hermit, it is said, taught them philosophy, music, astronomy, the military art, political

science, and medicine. He cured Amyntor of a blindness supposed to be incurable, and his renown for the treatment of ulcers was so great that the name of Chironians was given to those which resisted all curative means, and presented a malignant appearance. Finally, it is said, this hero or demigod, so skillful in dressing wounds of all kinds, met his death from the wound of an arrow poisoned by the blood of the hydra of Lerna. Esculapius, of all the disciples of Chiron, was the most eminent in a medical point of view. He passed for the son of Apollo, by the nymph Coronis. Several cities of Greece have contended for the honor of his birthplace; but the general opinion is, that he was born at Epidaurus, a city of Argolis, where he had a temple and a famous oracle. The twins, Castor and Pollux, were anxious that he should accompany the Argonautic expedition, which shows that he was famous at that epoch as a physician, or rather as a surgeon.

The Esculapius of the Hellenists, being of a date posterior to the Hermes of the Egyptians, and these two characters having between them many traits of resemblance, certain authors have thought that the latter might probably only be a copy of the former. However this may be, Esculapius obtained in antiquity nearly a universal veneration. His worship, which passed from the Greeks to the Romans, extended to all countries penetrated by the arms of these two nations. We shall speak elsewhere of the principal temples erected to his honor, of the priests which were connected with them, and the progress they made in medical science.

It is said that he brought from death to life Hyppolytus, son of Theseus, Capaneus, a Lycurgus, an Eryphile, and many others. In regard to the method which Esculapius followed in the treatment of diseases, as well as all else in relation to this deified personage, we possess no documents entitled to much credit. The poet, Pindar, who lived seven oi eight hundred years later, is the first to describe it in the following terms: "Esculapius cured the ulcers, wounds, fevers and pains of all who applied to him, by enchantments, charming potions, incisions, and by external applications. The greatest number of writers after the Beotian poet, such as Galen, Plutarch, Pausanias, Pliny and others, have reiterated

the same views. Plato, comparing the practice of Esculapius with that of his cotemporaries, gives the preference to the former.

Machaon and Podalirius touch the limits that separate mythology from history. Their existence cannot be considered doubtful, for the Homeric songs and other ancient writings agree in representing them as valiant captains and skillful physicians, who took an active part in the siege of Troy. They are said to be the sons of Esculapius, but this term is often used to designate men who devote themselves to the medical profession.

Machaon was regarded the elder of these two brothers. He treated Menelaus when that prince was treacherously wounded by Pindar. He cured Philoctetes, who was lame from a wound which he inflicted upon himself by letting fall upon his foot one of the arrows of Hercules. This illustrious surgeon met his death in a singular combat under the walls of Troy.

Podalirius survived him and assisted in the ruin of the kingdom of Priam, but on his return he was cast by a tempest on the shore of Caria. A shepherd rescued him, and learning that he was a physician, he conducted him to Dametus, the king of the country, whose daughter had lately accidentally fallen from the top of the house. She was insensible and motionless, and the attendants already supposed her dead, but this skillful surgeon bled her from both arms, and had the happiness of restoring her to life.

Here is the first example of bleeding practiced for the purpose of a cure; unhappily it is not very authentic. Stephen, of Byzance, who reports it nearly 1600 years after the event, wrote in the fifth century, and he does not indicate the source from whence he obtained it. However, the habit of blood letting goes back far beyond the era of Hippocrates, for he speaks of it in several places as a common practice in his time.

MEDICAL TEACHINGS IN THE TEMPLES.

The priests of Esculapius formed a separate caste, transmitting from one to another their medical knowledge as a family heritage. In the remotest times, no layman, says Galen, was admitted to participate in the sacred science, but

at a later period this severe secrecy was relaxed. They consented to reveal their secrets to strangers, provided they would fulfill the tests of initiation. There was then, according to every probability, some sort of medical instruction given in each temple. History has preserved three schools that have great reputation, viz: that of Rhodes, the most ancient of all, which had already ceased to exist at the time of Hippocrates, and of its doctrines we have no account whatever; that of Cnidus, which was the first to publish a small repertory, with the title of the Cnidian sentences; finally, that of Cos, the most celebrated of all, and which has given birth to a great number of illustrious physicians, whose writings constitute the most valuable memorials of antique medicine. Among the means of instruction offered by the priests of Esculapius, were the native tablets which it was customary to fasten to the walls and columns of the temples, after the examples of the Egyptians. Those tablets generally showed the name of the patient, the kind of disease with which he was attacked, and the manner of his cure. One of these tablets found at Rome, on the island in the Tiber, the site of the ancient Esculapian temple, bears the following inscription in Greek characters:

"Lately a certain Caius, who was blind, came to consult the oracle. The god required that he approach the sacred altar to perform adorations; at once he passed from the right to the left, and having rested his fingers on the altar, he raised his hands and applied them to his eyes. He recovered his sight immediately, in the presence of the people, who rejoiced to see such marvels accomplished under the reign of our august Antonius. Lucius was attacked with a pleurisy, and every one despaired of his life. The god ordered that the ashes of the altar be taken, mingled with wine and applied to his side. He was saved, and gave thanks to God before the people who congratulated him."

During the space of about 700 years, medicine in Greece underwent a first transformation; from having been domestic and popular it became sacerdotal, and wrapt itself in a mysterious habit. Until that time the world had princes—captains and shepherds even acquiring reputation for their skill in the art; but after the Trojan war, we only hear of consultations given in the name of the divinity in temples, or in some celebrated caves, such as those of Trophanius and Chironium.

The practice of medicine in the temples of Esculapius, may be divided into two epochs: in the first, which extends down to Hippocrates, the Asclepiadæ, though employing for the most part superstitious means, have rendered service to the science by the taste developed among some of them for observation; in the second epoch, which extends from Hippocrates to Christianity, medicine in the temples gradually declined, and was more frequently a gross jugglery. Until this time, in fact, no medical edifice had been formed of materials taken at hazard and gathered generally without taste or method; no harmonious thought or premeditated design directed the researches of the men who made the first discoveries; but afterward, reason and genius unite to extend and improve what accident and instinct had suggested; and the scientific monument of this difficult art begins to rise, grand and majestic, gradually harmonizing all its parts. Gradually science unrobed herself of the grave and mysterious forms of which she had always been clothed in the east, to assume a dress less severe and more transparent, that stimulated the philosophers of Greece to become more communicative. The vestiges of this antique Egypto-Indian civilization which had served as a model for that of Greece, were insensibly disappearing. Soon the sages of Greece ceased their journeys in search of light in foreign countries, for their own country became in its turn a center of illumination for all nations.

Pythagoras affords us the last example of peregrinations in search of wisdom. He is also the last of the sages who have transmitted their doctrines in an unusual language, and who made use of hieroglyphical writing. He was born at Samos, and flourished five centuries before the birth of Christ. He was at first an athlete, but having heard one day Pherecydes lecture on the immortality of the soul, he was so charmed that he renounced every other occupation to devote himself exclusively to philosophy. After having followed the course of this eminent master for some time, he felt desirous of knowing for himself the customs and names of other nations. He traveled in Egypt, in Phœnicia and in Chaldea, and it is said that he pushed his travels as far as India, where he commenced with the Brahmins and Magi, and was initiated into the secrets of

their worship, laws and doctrines. After a great number of years employed in schooling his mind by the practice of virtue, and enriching it with the most varied knowledge, he returned to his own country, and was honorably received by the tyrant Polycrates. His discourses had such success, that in a little time he drew around him a great number of disciples. He required of them a very severe novitiate of five or six years. They ate in common, using a very frugal diet, and assisted him in his lessons, and lived a modest, temperate life. Those only were admitted to participate in the mysteries of the order, but those who persevered. The veneration of his disciples for him was so great that many sold their property and gave the proceeds to him for the general good. He did not limit his teachings to the city of Crotona, but visited the principal cities of great Greece, among others, Terentum, Metapontum, and established communities in each of them, subject to the common rules. The Pythagoreans gained the esteem of the magistrates and the people; they were consulted on all difficult matters, and the superiority of their knowledge drew upon them the public confidence for a long time, but eventually the people took exceptions to their simplicity of costume, their symbolical language, their habitual silence, their avoidance of pleasure parties, and every thing, even to the purity of their lives; and the priests launched their anathemas at them because they did not share the superstitious prejudices of the multitude; mobs were excited against them; they were menaced by the populace in every city; and because they had to seek concealment to save their lives, the greater number withdrew from the society. In this way the society was broken up, and scattered in different parts of Greece, and many of them revealed the secrets of their doctrine.

A great number of the disciples of Pythagoras became illustrious in different causes, but we can only speak in this work of those who followed the practice of medicine. History states that these physicians first introduced the custom of visiting their patients at their own houses; that they went from city and from house to house, fulfilling the office of physicians, as is done at present. On this account they were called *periodic* physicians, in opposition to the Asclepiadæ, who were

consulted, and treated the sick only in the temples. As to the Charlatans, who retailed drugs in shops, or at market, it appears that they never had a rank in the medical hierarchy, however numerous they may have been at certain epochs.

Among the Pythagoreans who cultivated medicine, is Alcmocon, of Crotona, who is said to have written on Anatomy and Physics. Empidocles, of Agrigentum, was more famous than Alcmocon. Many remarkable cases are ascribed to him, which attest his sagacity. Among many instances that prove this, we select the following: From time immemorial, pestilential fevers ravaged periodically his native city. He observed that the appearance of these fevers coincided with the return of a wind named Sirocco, which blows in Sicily from the east and south. He therefore advised to close by a wall the narrow gorge which gave passage to this wind, when it blew on Agrigentum. His counsel was followed, and from that time the pest ceased to make its appearance in the city. Some modern travelers have confirmed this remark; among others, Doctor Brayer has alluded to it in his excellent work, entitled, "*Nine Years of Residence in Constantinople.*" The inhabitants of Selinus were a prey to an epidemic disease. A stream, by its sluggish course, filled the city with stagnant waters, from which were evaporated mephitic vapors. Empedocles saw this, and caused two small creeks to be conducted into it. This gave a new impulse to the waters, which ceased to be stagnant, and to exhale the noxious effluvia, and the scourge disappeared.

Agrigentum saw flourish about the same time another physician named Acron, who was not of the sect of the Pythagoreans. He rejected every thing in medical practice, every species of physiological theory, and insisted upon the value of pure experience only. On this account he is regarded by some as the chief of the *Empirists.* All that can be said in regard to that, is that the separation of physicians into several sects, each one having principles, rules, and, in some sort, distinct symbols, did not take place for two centuries later, until the establishment of the Alexandrian school.

THE PRACTICE OF MEDICINE IN THE GYMNASIÆ.

It is an incontestible fact that medicine was practiced and

taught in the gymnasiæ of Greece, a long time before the Asclepiadæ had divulged the secret of their doctrines. There were, in these establishments, three orders of physicians. A director, termed the *Gymnasiarch,* whose duties consisted in regulating the diet of the athletæ, and of the young men who frequented these schools, a sub-director or *Gymnast,* who directed the pharmaceutic treatment of the sick; lastly, subalterns, named *Jatraliptes,* who put up prescriptions, anointed, frictioned, bled, dressed wounds and ulcers, reduced luxations, fractures, etc. History has transmitted to us the names of two gymnasiarchs, cotemporaries of Hippocrates, but slightly older than he. The first was Iccos, of Tarentum, celebrated for his sobriety and continence. The second was Herodicus, of Sylembria. Plato gives him the credit of being the first who employed gymnastics in the cure of disease, and congratulates him on his success in prolonging the lives of valetudinarians; at the same time accused him of killing his fever patients with excessive fatigue. It is said that he obliged his patients to run without stopping the distance from Athens to Megara, and back again, equal to nine French leagues. Such exercise, fatigue, though useful in some slight chronic disorders, must have been fatal in acute diseases.

SCHOOLS OF THE ASCLEPIADÆ.

We have said that nearly everywhere the temples of Esculapius were dispensaries in which advice was given and remedies administered, and that the young sacerdotal aspirants were there trained in the practice of medicine.

The Asclepiadæ had preserved until that epoch the tradition of the Egypto-Indian school, which only allowed them to transmit their doctrines to the members of their caste, and to such strangers as fulfilled satisfactorily the initiatory tests. But when Pythagoras had revealed the secret of their mysteries, and the philosophers had dared to teach and discuss publicly the principles of morals, physics and theology, and the itinerant physicians and the professors of the gymnasiæ had acquired the confidence of the public, the priests of Esculapius could no longer keep silence, under the penalty of seeing the scepter of medicine, which they had held until then, fall from their

hands. They were constrained to bring to the light of discussion the principles and rules of their medical practice. In this way the science, the aim of which is the preservation and re-establishment of health, came forth at last from the shadow of the sanctuary, and, vivified by public discussion, made in a short time extraordinary progress. The priests who served in the temples at Cnidus, were the first to follow the impulse of the age. They published the little collection of Cnidian sentences before mentioned.

The Asclepiadæ, of Cos, did not hesitate to follow their example. They published a series of treatises, that were collected at a later period, under the title of the "Hippocratic Works." This collection, which over-shadowed all the medical publications of that period, constitutes one of the precious monuments of ancient medicine. But before speaking of the matter which it contains, we shall say a word or two about the personage whose name it bears.

Hippocrates was born in the Isle of Cos, of a family in which the practice of medicine was hereditary. They pretended to trace their ancestry to Esculapius. They count as many as seven of its members that had borne the name of Hippocrates; but the second in this range was the most celebrated in the range, and was born about 460 years before Christ. As the theories on which Hippocrates based his practice are of the most importance in this history, I will give them as condensed as possible. First, THEORY OF COCTION AND CRISIS. The theory which most universally prevails in the Hippocratic works, is that of coction and crisis. It is met with at every step, sometimes isolated, sometimes combined with others; but especially is it united to the system of *four elements and four humors*. It forms an integral part, and is the most characteristic trait of the ancient dogmatism, much of which is retained in our time, while all its cotemporaneous doctrines are abandoned. The Asclepiadæ, of the Isle of Cos, regarded disease as an association of phenomena, resulting from the efforts made by the conservative principle of life, to effect a coction of the morbific matter in the economy. They thought that it could not be advantageously expelled until it was properly prepared; that is, until after its elements were separated and united

with the natural humors of the body, so as to form an excrementitious material. When the morbid substance approaches the period of maturity, nature seems to redouble her efforts, the fever augments, the patient is overwhelmed or delirious, all the symptoms are aggravated and announce the approach of a revolution; this was the moment of the *crisis* or judgment of the disease. The day on which it was accomplished, the signs which preceded or accompanied it were termed *critical*, and required the special observation of the physician. Second, THE THEORY OF THE FOUR ELEMENTS AND THE FOUR HUMORS. After the theory of coction and crisis, that which prevails the most in the Hippocratic books, is the doctrine of four elements or the four elementary qualities—*heat*, *cold*, *dryness and moisture;* and the four cardinal humors—*blood*, *bile*, *atrabile and phlegm.* This doctrine was supposed to be the invention of the father of Greek medicine, Esculapius. Such is the opinion of all the commentators, and among others Galen, who extended it and perfected it in his manner; and it reigned exclusively after him. The theory of four elements and four humors harmonizes very well with that of coction and crisis, of which it appears to be the complement. He assumed that the phlegm augments during the winter; in the spring blood augments; the bile increases in the summer, and the atrabile or black bile in autumn. Hippocrates then explains how diseases are engendered, namely, by the influence of the seasons, regimen, the temperament and the air that is breathed. Finally, he establishes a general rule for their cure by inducing action in the system contrary to that induced by the cause of the diseases. These two theories united constitute the ancient dogmatism, originally of the school of Cos; it had the support of Plato and Aristotle. This doctrine, when Hippocrates appeared, had all the force and attraction of freshness, and it is not astonishing that he should make it the basis and model of his medical theory.

THEORY OF FLUXIONS.

Hippocrates taught that "fluxions are caused by cold, which causes the condensation of the tissues and veins of the head, if the cold strikes them when heated; then, by their

contraction, the humors contained in them are expelled. All the tissues are obliged to pour out their fluids when they contract. The liquids thus compressed are diffused in every possible direction. Fluxions are also caused by heat, because the tissues become rarified when they are heated, the pores enlarge, and the humor they contain is attenuated so that it flows easily when compressed."

It would be difficult to exhibit, in so few words, more ignorance on the conformation of our tissues and the laws of physiology and physics. The reigning theory in the school of Cos, as we have before said, was that which made the health depend on the exact proportion of the elements of the body, and the perfect combination of the cardinal humors—the blood, bile, phlegm and atrabile. According to it, all diseases proceed from one of these four elements—heat, cold, dryness or moisture, the excess of which engendered some humor badly concocted, or too abundant, which, by extravasation from its natural reservoirs, passes into parts not habituated to its presence. The equilibrium is established by the coction and evacuation of the piccant humor. This doctrine, which was taught almost exclusively until the foundation of the school at Alexandria, constituted the ancient dogmatism, so named, doubtless, because it embraces the most anciently professed dogmas in medicine.

Praxagoras was the first to observe the close connection between the changes in the pulse and the dynamic state of the economy. Yet it did not lead him to any conceptions of the circulation of the blood. The ancient theory was that the soul or immortal spirit resided in the left side of the heart, and it had access to all parts of the system through the arteries. They reasoned upon it as follows: During life the spirit is constantly heard at work in the chest, and upon examining the dead subject, they found the left side of the heart and arteries empty; it appeared clear to them that the spirit had flown from that citadel; hence the ancient saying, "the thoughts of the heart," and like expressions.

THE SOLIDS OF THE HUMAN BODY.

A solid is a body, the particles of which adhere together so that they will not separate by their own weight, but require the agency of some extraneous force to separate them.

Anatomists reduce all the solids in the human body to thirteen varieties: *enamel*, *bone*, *cartilage*, *muscle*, *ligament*, *vessel*, *nerve*, *ganglion*, *follicle*, *gland*, *membrane*, and *viscus*.

Enamel is the hardest of the solids. It covers the bony portion of the tooth, and qualifies it for the hard work of grinding the food. It also preserves the tooth by protecting the bony portion from the corrosive effects of oxygen and acidulous food upon it.

Bone is the next hardest of the solids. It forms the skeleton—the levers for the various muscles to act upon, and serves for the protection of important organs. The bones are protected by an external membrane called the *periosteum.*

Cartilage is of a white color formed of very elastic tissue, covering the articular extremities of bone to facilitate their their movements; sometimes added to bones to prolong them, as the ribs; at others placed within the articulations to act as elastic cushions to provide against serious concussions, and in the fœtus it forms a substitute for bones. Hence, cartilages are divided into *articular* and *inter-articular*, of prolongation and ossification.

The *Muscles* constitute the flesh of animals. They consist of fasciculi of red contractile fibres extending from one bone to another, and are the agents of all the movements. They are encased within a strong fibrous membrane called *aponeuroses*, from which the tendons are continuous.

The *Ligaments* are very tough, difficult to rend, and, under the form of cords or membranes, serve to connect different parts with each other, particularly the bones and muscles; hence their division into ligaments of the joints, that surround the joints to keep them in position, ligaments of muscles, as the tendonous aponeuroses, and the vaginal ligaments, as those in the hand and feet, that serve as lacing pulleys to keep the tendons in position while flexing the phalanges.

The *Vessels* are solids having the form of canals in which the fluids circulate. They are called according to the fluid

they convey: *sanguineous* (arterial and venous), *chyliferous lymphatic* and the *excretory* ducts.

The *Nerves* are dense cords consisting of numerous fasciculi. These are connected with brain, spinal marrow, and the great sympathetic or ganglionic. They are the organs through which motion, vital assimilation and sensation are effected in the system, and the organs enabled to perform their functional labors. They are divided into those of special sense, those that preside over muscular motion, over vital assimilation, over sensation, and the great sympathetic that governs the functional labors of the internal organs.

A *Ganglion* is a knot formed by the union of several nerves into one body; they perform the office of forming additional combinations of nervous elements. They are designed to contribute the element needed for the functional work of the organs.

Follicles or *Crypts* are secretory organs shaped like ampullæ or vesicles, always seated in the substance of outer membranes of the body—the skin on one of the mucous surfaces—and secreting a fluid to lubricate them. They are often divided into the *simple* or isolated, the *conglomerate* and the *compound*, according to the size or the number in which they are grouped and united together.

A *Gland* is also a secretory organ, but differing from the last. The fluid secreted by it is of greater or less importance. Its organization is more complex than that of the follicle; and the secreted fluid is poured out by means of one or more excretory ducts.

Membrane. This is one of the most extensive and important textures of the body. It is spread out in the form of a web, and in man it serves to line the cavities and reservoirs, and to form, support and envelope all the organs. They are divided into two kinds: the *simple* and the *compound*, according as they are formed by one or more layers. The simple membranes are of three kinds: 1st. The *serous* are those that form all the sacks or shut cavities of the body, as those of the cranium, chest and abdomen. 2d. The *mucous*, or those that line all the outlets of the whole body: the air passages, alimentary canal, urinary and genital organs, etc. 3d. The *fibrous membranes* are those which form the tendons, aponeuroses, ligaments, etc.

The *Compound Membranes* are formed by the union of the simple, and are divided into the *fibro-serous*, as the pericardium; *sero-mucous*, as the gall-bladder at its lower part; and *fibro-mucous*, as the ureter.

The *Cellular* or *Laminated Tissue* is an elastic areolar structure that underlies all the membranes proper, and forms an

elastic, movable separatix between them and the body they envelope. It also serves as a depository for the adipose or fatty substance.

The *Viscus* is the most complex solid of the system, not only as regards intimate organization, but use. This name is given to organs contained in the splanchnic cavities: cranium, thorax and abdomen, hence called *cerebral*, *thoracic* and *abdominal* viscera.

The *Brain* and its prolongation, the spinal marrow, is composed of the most subtle elements contained in the human organism. The cerebrum in its structure is composed of the organs of all the intellectual faculties. These organs are designed for the most acute perception and refined sensibility, and are endowed with ability when brought into use to comprehend all the principles that uphold the physical universe. The cerebellum is generally conceded to preside over reproduction, and the spinal marrow is connected with the whole system through the agency of thirty-one pairs of motor and vital nerves.

OF THE BRAIN.

The whole of the soft mass which fills the cavity of the cranium, is called the brain. This mass is covered by these membranes, two of which were called *meninges* or *matres* by the ancient anatomists, who believed that all the other membranes of the body originated from them.

These membranes are denominated the *dura mater*, *tunica aracnoidea*, and *pia mater*.

OF THE MEMBRANES OF THE BRAIN AND THE SINUSES OF THE DURA MATER.

The *Dura Mater* encloses the brain and all its membranes, and lines the cranium. It is the thickest and finest membrane of the body; it is very smooth and shining on its inner surface. It adheres to and serves as a periosteum to the internal surface of the cranium, but it is more firmly connected at the sutures and foramina than elsewhere. Its inner surface, which is very smooth and lubricated by a fluid which it exhales, is only connected to the brain when the veins go into the sinuses. The *proper* blood vessels of the dura mater are not very numerous. Its arteries are derived from the external and internal carotids and vertebral arteries. Corresponding veins accompany these arteries, but the dura mater, by the separation of its two lamina, forms also reservoirs that contain the venous blood that is brought from the substance of the brain. These are called sinuses, and are very different from common veins.

Nervous fibrils have been traced into the dura mater de-

rived from the sympathetic in the neck; also branches of the fourth pair and several from the fifth pair have been traced into it.

The *dura mater* sends a cylindrical prolongation through the basilar foramen, to the margin of which it is closely adherent, and down the vertebral canal to enclose the medulla spinalis. It sends also tubicular prolongations over each of the nerves as it passes out of the foramina of the cranium and spine to assist in forming their neurilemma or sheath.

OF THE TUNICA ARACNOIDEA.

The *Tunica Aracnoidea* is an exceedingly thin, tender and transparent membrane, in which no vessels have been hitherto observed.

It is spread uniformly over the surface of the brain, enclosing all its convolutions, without insinuating itself between any of them.

At the upper part of the brain it adheres so closely to the subjacent coat by fine cellular substance, that it can scarcely be separated from it; but in different parts of the base of the brain, particularly about the tuber annular and medulla oblongata, it is merely in contact with the membrane under it, and may be readily raised from it by the assistance of the blow-pipe.

The *tunica aracnoidea* belongs to the class of serous membranes and forms a double sac; one covering the pia mater and the other giving an internal polished facing to the dura mater. A loose cellular tissue serves to connect it to the pia mater.

This membrane serves to insulate the brain from contact with the dura mater. It also serves to protect the mental organs from being arbitrarily controlled by the will of another person.

OF THE PIA MATER.

The *Pia Mater*, which signifies *tender mother*, is a very vascular membrane, made up exclusively of vessels and a delicate cellular tissue which unites it to the phrenological convolutions of the brain. It enters double between all the convolutions of the brain, and lines the different cavities called *ventricles*. It serves to connect and support the vessels of the brain, and allows them to divide into such minute parts as to prevent the blood from entering the tender substance of this viscus with too great force.

The arteries of the pia mater are divided from the internal carotids and vertebrals. The veins differ in no respect from other viscera, excepting in this, that they do not accompany the arteries.

It gets its nerves from the branches of the sympathetic, which attend the arteries. Both the pia mater and the tunica aracnoidea send cylindrical prolongations down the vertebral canal, which surround the medulla spinalis.

The pia mater is changed in character so as to become a fibrous membrane, as it passes down over the crura cerebri, the pons varolii, and the spinal medulla, which latter it closely embraces.

PROCESSES OF THE DURA MATER.

From the dura mater certain membranous processes go off, forming incomplete partitions, which partially divide the cavity of the cranium; and in the same partial manner, separate the parts of the brain from each other, thus preventing them from pressing upon each other, and keeping them steady. They are formed of the internal lamina or layer of the dura mater, like a plait; and, therefore, each of them consists of a double membrane.

The most conspicuous of these is denominated the *falx*, which extends from the anterior to the posterior part of the cranium, and divides the upper part of the brain into two hemispheres; but it is not sufficiently deep to divide the whole of the brain; for, between the under edge of it and the base of the cranium, there is a large space occupied by a portion of the brain, which is undivided; and, therefore, common to both hemispheres. The falx begins at the middle of the sphenoid bone, and, continuing its origin from the crista galli of the ethmoid bone, runs along the upper and middle part of the head; adhering first to the frontal, then to the joining of the parietal, and afterwards to the middle of the occipital bone.

In its passage it becomes broader, and terminates behind in the middle of the tentorium. It runs from before backwards in a straight direction, and has some resemblance in shape to a sickle placed with its edge downwards; hence the name of *falx* given to it. After extending backward as far as the center of the crucial ridge, on the internal surface of the occipital bone, it extends to each side and forms a horizontal partition, which partially divides the lower part of the cavity from the upper; but it does not extend so far forward as to separate completely the mass which is under it, or the cerebellum from the cerebrum.

This horizontal membrane is called the tentorum, and also he transverse septum. It is connected behind to the inner transverse ridges and grooves of the occipital bone, and, at the fore and outer edges, to the ridges and great angles of the temporal bones, and terminates at the posterior clinoid process of the sphenoid bone.

Between the inner edge of the tentorium and the posterior

clinoid process of the sphenoid bone, there is a large notch or oval foramen, where the brain and cerebellum are united, or where the *tuber annulare* is chiefly situated, which unites them.

The tentorium keeps the falx tense, and forms a floor or vault over the cerebellum, which prevents the cerebrum from pressing upon it. The *falx minor* or *septum cerebelli* is placed between the lobes of the cerebellum. It descends from the under and back part of the falx, in the middle of the tentorium, adheres to the inferior longitudinal spine of the os occipitis, and terminates insensibly at the edge of the foramen magnum of that bone. Besides these processes of the dura mater, already described, there are four of lesser consideration, two of which are situated at the sides of the sella turcica, and two at the edges of the foramina lacera.

SINUSES OF THE DURA MATER.

As these partitions arise like plaits from the internal surface of the dura mater, there must necessarily be a cavity, larger or smaller, between the external layer of the dura mater, which lines the internal surface of the cranium, and the basis of the partition or process which arises from it. This cavity must continue along the whole basis of the whole partition, and a section of it will be triangular. This cavity is of considerable size at the upper edge of the falx, where it rises from the dura mater, and also where it forms the tentorium; and at the posterior edges of the tentorium where it adheres to the occipital bone. The cavity at the upper edge of the falx is called the *longitudinal sinus;* that at the posterior edge of the tentorium forms two cavities, called the *lateral sinuses;* and that which is at the junction of the falx and tentorium has the name of the *torcular* or *press of Herophilas;* so named from a supposition entertained by the older anatomists that the columns of blood coming in from different directions compressed each other at this point.

The veins of the brain open into these sinuses, and the blood flows through them into the internal jugular veins. They differ from veins principally in this, that they are triangular, and, by the tension of the dura mater, are protected from pressure. The principal sinuses are: first, the longitudinal sinus, which begins at the crista galli, and, running along the upper edge of the falx until it arrives at the tentorium, increases gradually in size, and terminates in the two lateral sinuses; second, the two lateral sinuses run in depressions of the occipital and temporal bones until they terminate in the internal jugular veins at the foramen lacerum; third, the torcular Herophili, which receives a large vein from the interior of the brain, formed by the union of the two vena galeni, and is situa-

ted at the junction of the falx and tentorium, opening into the longitudinal sinus, where it divides into the lateral sinuses. These are the largest sinuses of the dura mater; but, in addition to these, there are several small sinuses unimportant in a work like this.

OF THE CEREBRUM.

The *Cerebrum* completely fills the upper part of the cavity of the cranium. It is composed of two equal parts, which are separated vertically from each other by the falx. This vertical separation does not extend through the center of the cerebrum, although it divides it completely before and behind. A portion of the central part of the cerebrum, which is situated deeper than the under edge of the falx, is not divided.

The upper surface of the two hemispheres is convex; the under surface is rather irregular. It is divided in each hemisphere into three lobes: the *anterior*, the *middle* and the *posterior*. The anteroir lobes of the brain are situated on the front part of the base of the cranium, principally on the orbital processes of the os frontis. The middle lobes are lodged in the fossæ formed by the temporal and sphenoid bones. The posterior lobes rest chiefly upon the tentorium, over the cerebellum. Between the anterior and middle lobes is a deep furrow corresponding to the base of the cranium on which they rest, which is called the fossa sylvii.

The surface of the brain is convoluted, and, by the fissures that divide them, the various intellectual organs are separated from each other. These fissures that separate them do not extend very deep into the substance of the brain. The whole substance of the brain thus convoluted is covered by the pia mater, which closely adheres to it.

The mass of the brain consists of two substances of different colors; one of which is, for the most part, exterior to the other. The exterior substance is of a light brown color, and is therefore called *cineritious*, or cortical, from its situation. The internal substance is white, called the *medullary*. The proportion of the medullary part is much greater than that of the cortical. The cortical, however, surrounds it so as to form the whole of the surface of the cerebrum that can be strictly said to be exterior. The medullary portion is universally white. The internal part of the bottom part, which is not cleft by the two hemispheres, is also medullary, it being a continuation of the medulla from both hemispheres. This undivided medullary part is equal to one-half of the length of the hemispheres; the fissures extending inward one-fourth of their length. On each side of it, a fissure, equal to it in length, extends horizontally into the medullary matter in each hemisphere about half an inch. The whole of this unconnected

surface, the middle of which is at the bottom of the great fissure, is termed *corpus collosum.*

When the hemispheres are cut away to the level of this surface, and the corpus collosum is examined, two raised lines appear in the middle, which extend from one end of it to the other; and between them is a small groove of the same length. This groove is *raphe* or *suture* of the corpus collosum. From the raised lines or bands on each side of the raphe, small lines less elevated pass across the corpus collosum, and are lost in the medullary matter. The hemispheres being thus cut off at the level of the corpus collosum, on the cut surface is to be seen the interior mass of medullary matter, with the cortical part exterior, its edge exhibiting the convoluted surface of the brain, and the pia mater following the convolutions. The medullary surface, thus exhibited, with the corpus collosum in the center, is denominated the *centrum ovale.*

THE VENTRICLES.

In the brain there are four cavities called *ventricles;* three of these are formed in the substance of the cerebrum, the fourth is situated between the cerebellum, the pons varolii, and oblongata. The two largest are called the *lateral ventricles,* from their situations. The others are named from the order in which they occur—the *third* and *fourth* ventricles.

Another ventricle has more lately been discovered, called the *fifth.* It is very small, and situated between the two layers of the *septum lucidum.* It communicates downward between the anterior crura of the fornix with the cavity of the third ventricle.

The lateral ventricles are cavities of an extremely irregular figure. They are situated in each hemisphere a little below the level of the corpus collosum, and, with the exception of the partition which separates them, are directly under it. They commence anteriorly, nearly on a line with the termination of the fissure that separates the two hemispheres anteriorly, and continue backward almost as far as the commencement of the fissure that separates them posteriorly. When they have attained this length posteriorly, they form a considerable curve, first outward, then downward, and afterwards forward, so that they terminate almost as far forward as they commenced, but much deeper. At the posterior part of their curve, when they incline outward, previous to their turn downward, a process or continuation of the cavity extends backward almost as far as the cerebrum does itself. These elongations are called the posterior *cornua* or *sinuses,* or digital cavities. Each of these two ventricles may, therefore, be divided into three parts, viz : the portion under the corpus collosum; the portion which continues outward and downward and ter-

minates below it; and the posterior portion. It has been compared to a ram's horn by some who have contemplated particularly the upper and lower portions of the cavity; and by others, who have had the whole extent in view, it has been called *tricornis*. The bottom or lower surface of these cavities is varied in almost every part of its extent. The front part of the bottom of each ventricle is a broad and convex eminence, which becomes narrower as it proceeds backward, so that it resembles a portion of a pear. It inclines outward as well as backward, so that the narrow posterior extremities of the bodies are farther from each other than the anterior broad extremities. The color of these bodies is cineritious externally; but they are striated with medullary matter within, and therefore are called *corpora striata*.

Between their posterior extremities are two other eminences which incline to the oval form, and have a white or medullary color. Although their substance, when cut into, is slightly striated, they are called *thalami nervorum opticorum*. .These bodies are very near each other, and, being convex in form, are in contact at the center. They adhere slightly to each other, and this adhesion is called the soft commissure—commissura mollis.

The corpora striata and the thalami nervorum opticorum join each other at the exterior sides of the thalami. Where they are in contact there is the appearance of a narrow medullary band, which continues during the whole extent of their connection. It has been called by some tenia semicircularis, from its form; by others, *centrum geminum semicirculare*, and *tenia striata*. A vein of considerable size runs along the upper surface of the *tenia*, formed from the veins which emerge from the corpus striatum and thalamus, and it empties into the vena galeni of the same side. A yellowish band, called the tenia tarini, or horny band, formed by a thickening of the lining membrane of the ventricle, overlays this vein. These surfaces constitute the bottom or floor of the first portion of the ventricles, which is under the corpus callosum. Upon this floor is laid a thin lamen of the medullary matter, of a triangular form, called the *fornix*, which covers the thalami nervorum opticorum, and is attached to them by a membrane, so that when the ventricles are opened the bottom appears to consist of the corpora striata and the fornix. The upper surface or roof of the ventricles is concave. From the middle of it, immediately under the raphe of the corpus callosum, then proceeds downward a portion of the medullary matter, which separates the two ventricles from each other. This is called the *septum lucidum*, from its being nearly transparent; below, it adheres to the fornix; and, anteriorly, it is continued into the medullary

matter, between the corpora striata. This septum lucidum is formed of two lamina or plates, which are separated from each other, in the anterior portion of the septum, and thus form a small cavity, which has communication with the third ventricle of the brain.

The fornix is not perfectly flat, but accommodated to the surface of the thalami nervorum opticorum; its under surface is rather concave and its upper surface convex. The anterior angle passes down between the most anterior parts of the thalami nervorum opticorum, and is divided into two small portions called its *crura*, which can be traced some distance in that part of the brain.

The body of the fornix is attached to the surfaces of the thalami nervorum opticorum (on which it rests) by a very vascular membrane, that is spread over the thalami, and called *tela choroidea* and *velum interpositum*. At the edges of the fornix, there are many blood-vessels in the membrane, arranged close to each other, which are called the plexus choroides.

The posterior side or edge of the triangular fornix terminates in the corpus callosum or the medullary matter which is above it at that place; but the under surface is attached throughout to the parts on which it lies, by the aforesaid membrane. The two posterior angles of the fornix form what are called the *crura*, and they terminate in the following way:

The surfaces of the inferior portions of the lateral ventricles are not uniformly concave; but at the bottom of each there is a prominent body, which begins where this portion of the cavity winds outward and forward, and continues its whole extent. This prominence has a curved form, and is marked by transverse indentations toward its extremity; hence it has been termed the *hippocampus* or *cornu ammonis*. A similar prominence, but smaller and without the transverse indentations, is to be found in the posterior portion of the ventricle. This has been also called hippocampus; but the terms *major* and *minor* are applied to distinguish them.

The posterior angles of the fornix terminate in the large hippocampi, and the margin or thin edge of the two anterior sides of the fornix is continued to form an edge to the hippocampus, and is called the *tænia hippocampi* or *corpus fimbriatum*.

The word fornix was the ancient name of an arch to a vault, and, from its supposed resemblance to an arch, this part has been called by that name.

When the fornix is raised up, which must be done by dividing it at the anterior angle and detaching it from the thalami nervorum opticorum, the thalami, by dissecting off the *velum interpositum*, are brought fairly into view, and appear like oval

bodies placed parallel to each other. They adhere slightly to each other at their upper surfaces, and, when separated, a fissure appears between them, which is the third ventricle. At the upper and front part of this ventricle, near its commencement, before the anterior crura of the fornix and very near them, is a white cord like a nerve, which passes across the ventricle, and can be traced to some distance on each side of the medullary matter of the brain. This cord is called the *anterior commissure of the brain.*

The thalami nervorum opticorum being of an oval form and touching each other in the middle, there must be a vacuity between them at their extremities. This vacuity is behind the anterior crura of the fornix, and has been called vulva iter ad infundibulum, and iter ad tertium ventriculum. It leads, of course, into the third ventricle; but a passage continues from it downward and rather forward to the infundibulum, which is a process somewhat resembling a funnel that is composed principally of cineritious substance, and passes from the lower and front part of the third ventricle toward the sella turcica, in which is situated the small body called the *pituitary gland.*

The infundibulum is hollow at its commencement and solid at its extremity near the gland.

The adhesion of the thalami nervo. optic. to each other at the upper part of the third ventricle has been denominated the commissura mollis. The recession from each other at their posterior extremities, in consequence of their oval figure, forms another opening into the third ventricle when the fornix and tela choroidea is raised, but which is closed when they are in their natural situations upon it. In the back part of the third ventricle is another medullary cord, called the *posterior commissure,* which appears much like the anterior commissure, but does not extend into the substance of the brain in the same way. Under this cord or posterior commissure is a passage which leads to the fourth ventricle, called *iter ad quartum ventriculum* or *aqueduct of Sylvius.* Behind the third ventricle and terminating it posteriorly are four convex bodies, called tubercular quadrigemina, or *nates* and *testes.* The nates are uppermost and most convex; the testes are immediately below and somewhat oval transversely.

The nates and testes are situated so far backward that they are near the anterior part of the upper surface of the cerebellum and the anterior edge of the middle of the tentorium. The posterior part of the fornix is directly over them, but it unites with the medullary matter of the cerebrum above it. There would, therefore, be a passage into the lateral ventricles from behind, between the back of the fornix, which is above, and the nates and testes, which are below; but the velum in-

terpositum passes in from behind and attaches the lower surface of the fornix to all the parts on which it lies, and thus closes the ventricles at this place. In this membrane, immediately over the posterior end of the fissure called the *third ventricle*, and in contact with the nates, is the *pineal gland.* This body is not so large as a pea, and is formed like a pineapple or the cone of a pine tree.

When the fornix is raised by dissecting the membrane, it may be elevated with the membrane and fornix. It resembles a small gland in its appearance, but it is very soft, and particles of matter like sand are often found in it. There is a small cord on each edge of the third ventricle, which appears to proceed from the pineal gland, and continues on the edge of the ventricle to the anterior crura of the fornix, to which it unites. These cords join each other under the pineal gland. They are called the *pedunculi* or *foot-stalks* of the pineal gland.

The membrane connected with the pineal gland, it has been said, is the *tela choroidea* or *velum interpositum*, in which the plexus choroides is placed, at the edges of the fornix. This membrane is extended, somewhat thinner and less vascular, so as to line the surface of the ventricles. The plexus choroides appears to begin at the end of each of the inferior portions of the ventricles, where the pia mater penetrates from the basis of the brain. It proceeds into the upper portions of the ventricles, and, continuing along the edge of the fornix, passes under that body at its inferior angle and meets the plexus of the opposite side. Between this meeting of the plexus and the crura of the fornix is a vacuity of an oval figure, which forms a communication between the ventricles of the brain. Under this vacuity or foramen the thalami nerv. optic. recede from each other and form the anterior passage into the third ventricle. From the plexus choroides of each side, where it has passed under the fornix at the anterior angle, a large vein is turned backward so as to run nearly over the figure of the third ventricle toward the pineal gland. Several veins from the surface of the ventricle join this vein near its commencement; thus formed, it passes along with the corresponding vein from the opposite, sometimes in contact and sometimes separated from it a small distance. Near the pineal gland these veins unite into one trunk, the great internal vein of the brain, called the *vena galeni*, which terminates soon after in the torcular herophili.

OF THE CEREBELLUM.

The cerebellum is situated in the lower and posterior part of the cavity of the cranium, in contact with that portion of

the os occipitis which is below the groove for the lateral sinuses. It is, of course, much less than the brain.

It is covered above by the tentorium, and is divided below into two lobes by the falx minor.

The surface of the cerebellum differs in some respects from that of the cerebrum. Instead of the convolutions, these are small superficial depressions, which are nearly horizontal, tending to divide the cerebellum into strata. The pia mater extends into these depressions, and the tunica arachnoidea passes over them, as in the cerebrum. The exterior part of the cerebellum is composed of cineritious or cortical and the interior of medullary matter, as is the case with the cerebrum; but the proportions of these substances in the cerebellum are the reverse of what they are in the cerebrum.

If sections be made in the cerebellum, the medullary matter is so arranged that it appears like the stem or trunk of a plant, with ramifications extending from it. This appearance has been called *arbor vitæ.*

On the basis of the brain is a part called *tuber annulare* or *pons varolii*, which is formed by processes from the cerebrum and cerebellum. It is in contact with the anterior and inferior portion of the cerebellum in the middle. From this part the medulla oblongata proceeds downward and backward under the cerebellum, and between the cerebellum, the medulla oblongata, and the pons varolii, is the vacuity called the *fourth ventricle* of the brain.

When the brain is in its natural situation, this cavity is below and behind the nates and testes, and from the cerebellum there passes up to the testes a lamen of medullary matter, which closes it above. This lamen is called the *valve of Vieussens* or the *valve of the brain.* Below, the ventricle is closed by a membrane which connects the medulla oblongata to the cerebellum. There is a passage into this cavity from the third ventricle, which passes under the posterior commissure, the nates and testes, entering the fourth ventricle below the testes.

OF THE BASE OF THE BRAIN AND THE NERVES WHICH PROCEED FROM IT.

When the brain is detached from the basis of the cranium and inverted, the tunica arachnoidea appears more conspicuous on the basis than on the upper part; the pia mater is disposed round the convolutions in the same manner that it is above, but the nerves and vessels connected with the surface of the brain are so much involved with these membranes that considerable dissection is required to expose them properly.

The anterior and middle lobes of the brain are very conspicuous on the inverted surface. The anterior lobes appear

separated from each other by the extension of the great fissure which forms the two hemispheres.

The middle lobes appear at some distance from each other in the center, and the cerebellum forms the posterior and most prominent part of the surface. When the brain has been carefully detached from the cranium and the nerves adhering to it are preserved, the *olfactory* or *first* pair of nerves appear on the anterior lobes, running nearly parallel to each other at a small distance from the great fissure. They are flat, thin, and soft in their texture; their breadth is rather more than one-sixth of an inch. They pass in three divisions from between the anterior and middle lobes of the cerebrum, which soon unite and run to the cribriform plate of the ethmoid, where they expand into soft bulbous lobes, from which proceed the fibres that perforate the cribiform plate, and are spread upon the schneiderian membrane. Behind the olfactory nerves are the *optic*, each of which comes out between the anterior and middle lobes of the cerebrum, and, after blending so as to meet its fellow, turns off and passes through the optic foramen in the sphenoid bone. These nerves can be traced in the brain to the thalami nervorum opticorum.

In the angles formed by the optic nerves posteriorly is a mass of softish cineritious matter (pons tarini), and also the infundibulum which passes to the sella turcica.

In this soft cineritious matter are two round white bodies that resemble peas. They are called the *corpora albicantia of Willis* or the *eminential mammillaries*. Behind these bodies are two large medullary processes called the *crura cerebri*, which are best seen if some of the cortical part of the adjoining middle lobes is dissected away. They come from the medulla of the opposite sides of the brain, and gradually approach each other until they arrive at the tuber annulare or pons varolii.

The *pons varolii* is a mass of considerable size which has a medullary appearance externally, but is striated within. It is formed by the union of the two above-mentioned crura cerebri and of two similar processes derived from the cerebellum, called also its *crura*. It lies over a part of the body of the sphenoid bone and of the cuneiform process of the occipital bone, and under a portion of the middle lobes of the cerebrum and of the cerebellum. There is a longitudinal depression on its surface, made by the basilar artery, and there are also many transverse streaks on it.

The crura of the cerebellum, which runs into this substance, are evidently continued from the arbor vitæ or medulla of the cerebellum. The anterior edge of the cerebellum, part of which is in contact with the pons varolii, is remarkably prom-

inent on each side of it. These prominences are called the vermes of the cerebellum. The *medulla oblongata* is continued backward from the posterior side of the tuber, and somewhat resembles a truncated cone inverted. It lies on the cuneiform process of the occipital bone, and extends to the foramen magnum. It is indented lengthwise, both anteriorly and posteriorly, by fissures which are very evident. It is composed of medullary matter externally and cineritious matter within.

On each side of the anterior fissure, which is in view when the brain is inverted, are two oblong convex bodies; those which are next to the fissure are called *corpora pyramidalia*, and are the longest. The two exterior are called *corpora olivaria*, and are not so long.

The *third pair of nerves* come from between the crura of the cerebellum, and pass forward, diverging from each other. They proceed by the cavernous sinus, and, after penetrating the dura mater, go out of the cranium at the foramen lacerum.

The *fourth pair*, the smallest nerves of the brain, resemble sewing thread in their size and appearance. They come out between the cerebellum and pons varolii, but can be traced backward as far as the testes. They proceed forward by the sides of the pons varolii, and, after penetrating the dura mater near the clinora apophysis, pass through the foramen lacerum to the trochlearis muscles of the eye.

The *fifth pair*, the largest of the brain, arise from the crura of the cerebellum, where they unite with the pons varolii. They pass forward and penetrate the dura mater near the point of the petrous portion of the temporal bone. This nerve appears like a bundle of fibres, and, under the dura mater, forms a plexus, from which its three great branches proceed to their destination.

The *sixth pair* arise from the medulla oblongata, where it joins the pons varolii. It is often composed of two cords on each side, one of which is very small. They pass under the pons varolii and through the cavernous sinus with the carotid artery. After emerging from this sinus they proceed through the foramen lacerum to the abductor muscles of the eye. In this course a small twig passes from it, which accompanies the carotid artery through the canal in the petrous portion of the temporal bone, and, with a twig from the fifth pair, is the origin of the intercostal nerve.

The *seventh pair* appear at the sides of the medulla oblongata, near the pons varolii. It is composed on each side of two cords called *portio dura* and *portio mollis*, and one or more small fibers between them, called *portio media*. The portio mollis can be traced to the fourth ventricle. The portio dura seems to arise from the place of union of the pons varolii with

the medulla oblongata and the crura cerebelli. The portio media appears to originate in the same neighborhood and may be considered as an appurtenance of the portio dura. They all proceed to the meatus auditorious internus, as it has been called, in the temporal bone.

The *eighth pair of nerves* arise from the corpora olivaria on the side of the medulla oblongata. They are composed, in each, of one cord called the *glosso-pharyngeal*, and of a considerable number of small filaments, which unite and form another cord called *par vagum*.

With these nerves is associated a third cord, called the *spinal accessory nerve* of Willis, which passes up the spinal cavity, being composed of twigs from the posterior and anterior portions of almost all the cervical nerves.

The par vagum, with this nerve and the glosso-pharyngeal, proceeds from its origin to the foramen lacerum formed by the occipital and temporal bones, where they all pass out of the cranium, separated from each other, and from the internal jugular vein, by small processes of the dura mater. Their destination is extremely different. The glosso-pharyngeal is spent upon the tongue and pharynx, the par vagum upon the contents of the thorax and abdomen, while the accessory branch, which seems to have no connection with them, perforates the sterno-mastoid muscles, and is distributed among the muscles of the shoulders and arms. Its office is to give precision and agility to the movement of the hands.

The *ninth pair* arise from the corpora pyramidalia by many filaments that are united on each side into three or four fasciculi, which perforate the dura mater separately and then unite to pass out of the anterior foramen of the occipital bone. This pair is spent upon the muscles of the tongue. Its office is to strengthen the organ and thereby give agility to speech.

OF THE SPINAL MARROW.

The medulla oblongata is continued from the cavity of the cranium, through the great foramen of the occipital bone, into the great canal of the spine, when it takes the name of *medulla spinalis* or *spinal marrow*.

The dura mater passes with it through the great foramen and encloses the whole of it. At the commencement of the spinal canal this membrane is attached to the surrounding bones, viz: to the margin of the great occipital foramen and to the atlas; but below this it is loosely connected by a membrane which sometimes appears to contain a little adipose. The tunica arachnoidea appears unconnected with the dura mater, and it can be easily removed from the pia mater. The pia mater adheres rather firmly to the substance it encloses. The spinal

marrow consists of medullary matter externally and cineritious or cortical matter internally.

The fissures which are observable, anteriorly and posteriorly, in the medulla oblongata, are continued down the spinal marrow, dividing it partially into two lateral portions. These fissures penetrate to a considerable depth. Each of the lateral portions is marked on its external surface by a more superficial fissure, which partially divides it into an anterior and posterior part, so that a transverse section of the spine has a cruciform appearance.

The nerves go off in fasciculi from the anterior and posterior surfaces of each lateral portion of the spinal marrow, so that each nerve is formed of two fasciculi, one from before and the other from behind. The fasciculi are of different sizes in different parts of the spine. The lowermost of the neck are large and broad; those of the back are slender; and those of the loins and upper part of the sacrum are very large.

The uppermost of the fasciculi of the spine proceed almost at right angles with the medulla spinalis to the foramina through which they pass. Those which are lower pass off in a direction obliquely downward, and the lowermost are almost perpendicular. Between the anterior and posterior fosciculi, a fine ligamentous cord passes, which is attached to the dura mater as it passes through the foramen magnum, and continues to the os coccygis. It passes between the tunica arachnoidea and the pia mater, and is attached to the pia mater by cellular membrane. It sends off a small process in a lateral direction, to be attached to the dura mater, and nearly in the middle of the upper and lower fasciculi.

The spinal marrow terminates in a point near the uppermost lumbar vertebra. The ligamenta denticulata of the opposite sides join together at this point and form a small cord, which, continuing downward, is inserted into the os coccygis.

These ligaments help to support and keep fixed the medulla and the nerves as they originate from it. As the spinal marrow terminates at the lumbar vertebra, the lumbar and sacral go off above. They pass down like a bunch of straight twigs, and are called *cauda equina*, from a fancied resemblance to the tail of a horse. The sheath formed by the dura mater for the spinal marrow continues of its original size, and encloses them in one cavity.

The posterior and anterior fasciculi pass out separately from the dura mater. After they are out, the posterior fasciculus forms a ganglion, from which one nerve passes that joins the anterior fasciculus, and thus forms the spinal nerves.

When the nerves go off, either from the spinal canal or the cavity of the cranium, the external lamen of the dura mater,

where they pass out, attaches itself to the bone or periosteum, while an internal lamen, together with the pia mater and, perhaps, the tunica arachnoidea, is continued with the nerve.

This process from the dura mater becomes so much changed that it has been considered as cellular membrane.

The pia mater and tunica arachnoidea seem also to invest not only the nerve in general, but the fibers of which it is composed. On this account, probably, the nerves are larger after passing through the dura mater than they are when they leave the brain and spinal marrow.

The *arteries of the spinal marrow* proceed from the head, and, with several additions, continue downward to the lumbar vertebræ.

There is generally one artery on the front surface of the medulla, which is formed by the union of two branches that arise from the vertebral arteries within the cranium. This artery proceeds downward and communicates with those of the neck with the intercostal arteries by the intervertebral foramina, so that it preserves its size.

It terminates with the spinal marrow, and the cauda equina below it is supplied by branches from the internal iliac, which enter through the foramina of the sacrum. There are generally two arteries on the posterior surface of the medulla spinalis, which also pass out from the cranium, arising from the vertebral arteries or inferior arteries of the cerebellum. They have a serpentine arrangement, and communicate with each other and with the ramifications of the anterior spinal artery. All of these arteries are dispersed upon the spinal marrow and its membrane and the parts immediately contiguous. The veins correspond with the ramifications of the arteries, but they are collected into large branches, called *sinus venose*, which are situated exterior to the dura mater, on the front and lateral sides of the spinal canal. They extend the whole length of the canal, and, entering the great occipital foramen, communicate with the lateral and occipital sinuses.

OF THE NERVES.

The brain, spinal marrow and their nervous appendages, make up the nervous system.

This great system of nerves constitutes the man proper; for it is this constructing and upholding genius that the elements so promptly obey in combining to contribute to the constitutional structure under its charge. By it the chemical powers are directed; it directs all involuntary motion; it maintains the equilibrium of action between the organs; it directs and maintains the balances of health; it places the muscles, the servants of the mind, efficiently under the control of the will;

it provides for all the perceptive faculties, and, through the medium of sensation, the circle of protectorates are rendered competent to regulate the conditions and supervise the dependencies expected of mind to sustain life.

If these offices are intelligently performed the powers of the system will be preserved, health maintained and life rendered secure. In order to secure these ends, it is important to have some rational ideas of the laws and habits of the system, its capabilities and the many causes that derange the nervous system and disqualify it for performing the high offices assigned to it.

The *first pair*, or *olfactory* nerves, are distributed to the organs of smell; the *second pair*, or *optic*, the expansion of which forms the retina; the *third pair*, *motores oculi*, or *common oculo-muscular*, which send filaments to most of the muscles of the eye; the *fourth pair*, *trochleares pathetici*, or *internal oculo-muscular*, distributed to the greater oblique muscle of the eye; the *fifth pair*, *trifacial*, *trigemini*, or *symmetrical nerve of the head*, which send their branches to the eye, nose and tongue; the *sixth pair*, *abducentes*, or *oculo-muscular*, which are distributed to the abductor or rectus exturnus oculi; the *facial nerve*, *portio dura* of the seventh pair, nervus communicans faciei, or *respiratory nerve of the face*, distributed to the muscles of the face; the *accoustic nerve*, *auditory* nerve, or *portio mollis of the seventh pair*, which passes to the organ of hearing; the *eighth*, *pneumogastric*, *par vagum*, or *middle sympathetic*, which is dispersed particularly to the larynx, lungs, heart and stomach; the *glosso-pharyngeal*, often considered as a part of the last, which, as its name indicates, is distributed to the tongue and pharynx; the *great hypoglossal*, *ninth pair*, or *lingual nerve*, distributed to the tongue; and the *spinal accessory* of Willis, which arises from the spinal cord in the cervical region, ascends into the cranium and issues by one of the foramina, to be distributed to the muscles of the neck and shoulders, to give a finer sense of tact to the fingers, and to give agility and precision to the movements of the hands.

The spinal nerves are thirty-one in number on each side. They make their exit by the intervertebral foramina, and are divided into eight *cervical*, twelve *dorsal*, five *lumbar*, and six *sacral*.

The encephalic nerves are irregular in their formation, and, with the exception of the fifth pair, originate from one root.

Each of the spinal nerves arise from two fasciculi, the one anterior and the other posterior. These are separated from each other by the *ligamentum denticulare*, but they unite beyond the ligament, and, near the intervertebral foramina, present one of those knots known as ganglion or ganglia, in

the formation of which the posterior root is alone concerned.

When the nerves have passed out from the cranium and spine, they go directly to the organs and parts they were designed to construct. The quality of the nerves is as dissimilar as the texture of the organ or part they compose, the organs of special sense and parts assigned for acute sensibility requiring a much finer texture than other parts of the system.

The spinal nerves, at their exit from their intervertebral foramina, divide into two branches, an anterior and a posterior, one being sent to each aspect of the body. The anterior branches of the four superior cervical pairs form the *cervical plexus*, from which all the nerves of the neck arise; the four last cervical pairs and the first dorsal form the *brachial plexus*, whence proceed the nerves of the upper extremities; while the branches of the five lumbar nerves and the six sacral form the lumbar and sciatic plexuses, the foramen of which gives rise to the nerves distributed to the parts within the pelvis, and the second to those of the lower limbs. The anterior branches, moreover, at a little distance from the exit of the nerve from the vertebral canal, communicates with the *great sympathetic* or ganglionic trunks that supply the functional nerves for all the vital organs.

This branch of the nervous system is constituted of a series of ganglions, joined to each other by a nervous trunk that extends down the side of the spine, from the base of the cranium to the os coccygis or lower bone of the spine. It communicates with each of the spinal nerves and with several of the encephalic; and from the ganglions formed by such communication it sends off nerves to the vital organs to preside over their functional labors. At its upper part it is situated in the carotid canal, where it appears under the form of a ganglionic plexus, two filaments of which proceed to join the sixth pair of encephalic nerves, and another to meet the vidian twig of the fifth pair, which communicates with the ophthalmic ganglion, which evidently belongs to this series of ganglia. On issuing from the carotid canal, the nerve passes downward along the side of the spine to the sacrum, presenting a series of ganglia—three in the neck, the *superior*, *middle*, and *inferior cervical*—twelve in the back, the *thoracic*—five in the loins, the *lumbar*—and three or four in the sacrum, the *sacral*. When it reaches the coccyx, it terminates by a small ganglion, called *coccygeal*, or by uniting with the great sympathetic of the opposite side.

The ganglia are of an irregular but generally roundish shape. They consist of nervous filaments, surrounded by a reddish gray, pulpy, albuminous or gelatinous substance, which differs from the gray matter of the brain.

The heart receives its functional nerves from the three cervical plexuses. They enter the descending vena cava near the heart, and are reflected over the right auricle and ventricle, and are extended in the pulmonic arteries to their termina at the points of the hæmatosis, and officiate to give that sensitive condition to the inner membranes of the heart by which its contractile force is dependent in the work of circulating the blood. It also furnishes the chemical element by which hæmatosis is effected.

From the ganglia near the heads of the fifth and sixth ribs, and from four or five ganglia which succeed them, small nerves arise, which proceed downward on the sides of the bodies of the vertebræ, and unite into one trunk that is denominated the *splanchnic nerve*, because it is distributed to the viscera of the abdomen. A second and smaller nerve, of the same destination, called the *lesser splanchnic nerve*, arises lower down, from two or three of the lowermost dorsal ganglia, and penetrates separately into the cavity of the abdomen. It then divides into two branches, one of which unites to the great splanchnic nerve and the other proceeds to the *renal plexus*, soon to be described.

As soon as the great splanchnic nerve has entered the abdomen, it divides into many branches, which form small ganglia on each side of the cœliac artery, but above it. These ganglia are generally contiguous, but sometimes they are a small distance from each other and united by nerves. They are, however, commonly spoken of as one, and called the semilunar ganglion. They are of irregular form, and very different from each other in size as well as form. From this assemblage of ganglia proceed many small nerves, which connect with each other and form what is called the *solar plexus*.

This plexus is anterior to the spine and crura of the diaphragm, behind the stomach and above the pancreas.

The diaphragm is supplied with nerves from the semilunar ganglia, through which the involuntary motion of the diaphragm is effected in respiration.

The lower part of the solar plexus, which surrounds more immediately the cœliac artery, is termed the cœliac plexus. From it networks of nerves extend upon the great branches of the artery to the organ to which they go.

They extend to the stomach (although it is supplied by the par vagum) along the superior coronary, or gastric branch of the cœliac ; and the fibres in their composition being spread upon the coats of the stomach, unite with the branches of the par vagum, which are also spread upon them.

A similar net-work, denominated the *hepatic plexus*, extends upon the *hepatic artery*, and from it to the *vena portarum*, and

accompanies those vessels into the substance of the liver. It also sends branches to the biliary duct and gall-bladder ; to the stomach by the arteria gastrica dextra ; and to the omentum.

The *splenic artery* is invested by a similar but smaller arrangement of nerves, denominated the *splenic plexus.* In its course to the spleen, this plexus sends some nerves to the pancreas ; and also to the stomach and omentum with the left gastric artery.

The superior mesenteric artery is surrounded by a net-work, which extends to it directly from the solar plexus, and is the largest of all which proceed from that plexus.

The *mesenteric plexus* at first nearly surrounds the artery, and proceeds with it between the lamina of the mesentery. In this course it sends branches, with the arteria colica dextra, to the transverse portion of the colon. Between the lamina of the mesentery it sends ramifications with all the branches of the artery to the small intestines generally ; to the cœcum, and the right portion of the colon, as well as to the mesenteric glands.

From the lower part of the solar plexus a net-work proceeds on to the front of the aorta, to the inferior mesenteric artery, and surrounds it. Nerves from this plexus accompany the artery to the left portion of the colon and the rectum. Some of their ramifications combine with those of the hypogastric plexus.

The *emulgent artery* is attended by nerves, which are arranged like a net-work on its anterior and posterior surfaces, and are denominated the *renal plexus.* They are derived from the solar plexus, and frequently contain small ganglia. They proceed with the artery to the fissure of the kidney, and are distributed with its different ramifications, in the substance of the organ. Some branches pass from them to the renal gland, with the capsular artery. Before the renal plexus arrives at the kidney, it sends off, from its inferior part, some new fibers, which, after joining some others from one of the lumbar nerves, accompany the spermatic arteries, and are therefore called the *spermatic plexus.* In the male, these fibres proceed through the abdominal ring, and many of them go to the testis, but they are followed with great difficulty, on account of their small size. In the female, they go to the ovary and the fallopian tubes.

From the great plexuses above, a small net-work continues downward on the aorta, receiving fibres from the intercostals on each side. At the great bifurcation of the aorta it divides, and is joined on each side by the many ramifications from the third lumbar nerves, which thus form a plexus of considerable

extent, that sends nerves to the bladder, rectum, and vesiculæ seminales in males, and to the uterus and vagina, as well as the bladder and rectum, in females. This is called the *hypogastric* plexus.

The plexuses above-mentioned are derived from the splanchnic nerve, which comes off from the *sympathetic* in the thorax.

The sympathetic, after giving off the larger splanchnic, is diminished in size, and approaches nearer to the bodies of the vertebræ. It passes through the crura of the diaphragm, and then proceeds forwards and downwards upon the spine, between the tendinous crura of the diaphragm and the psoas muscles near the vena cava on the right side, and the aorta on the left. In this course, it receives one or two small cords from the anterior branch of each of the lumbar nerves ; the cords proceed downwards and fowards, between the bodies of the vertebræ and the psoas muscle, and a ganglion is generally formed at the place where they join the nerve. In its descent on the lumbar vertebræ, the sympathetic sends off several nerves that unite to the net-work, which descends on the aorta from the plexus above. After passing over the lumbar vertebræ, it descends into the pelvis, close to the sacrum, on the inner side of the great foramina : here it also forms ganglia and communicates with the sacral nerves, and likewise with the hypogastric plexus. It terminates on the os coccygis, where its minute fibres join those of the opposite side.

OF THE TRACHEA AND THE LUNGS.

Although the principal part of the windpipe is situated in the neck above the cavity of the thorax, it is so intimately connected with the lungs that it is necessary to describe them together.

OF THE TRACHEA.

Trachea is the technical name for the windpipe, or the tube which passes from the larynx to the lungs. This tube begins at the lower edge of the cricoid cartilage, and passes down the neck in front of the æsophagus as low as the third dorsal vertebræ, where it divides into two branches called *bronchia,* one of which goes to the right and the other to the left lung, in which they ramify very minutely.

The *right bronchium* is larger than the *left,* in proportion to the great size of the right lung. It is also shorter and placed more anterior and more horizontal than the left, in consequence of the right lung being shorter in its vertical diameter, and longer in its antero-posterior than the lung of the left side. It enters near the center of the root of the lung, opposite to the fourth dorsal vertebræ.

The *left bronchium* terminates, or enters the root of the left lung, opposite the fifth dorsal vertebræ. The right bronchium is embraced at its upper part by the vena azygos, the left by the arch of the aorta.

There is in the structure of each, a number of flat cartilaginous rings, placed at small distances from each other, the edges of which are connected by membrane, so that they compose a tube. These cartilaginous rings are not complete, for they do not form more than three-fourths or four-fifths of a circle; but their ends are connected by a membrane which forms the posterior portion of the tube. They are not alike in their size or form; some of them are rendered broader than others, by the union of two or three rings with each other, as the uppermost. The lowermost is also broad, and has a form which is accommodated to the bifurcation of the tube. Their number varies from fifteen to twenty in different persons.

These rings may be considered as forming a part of the first proper coat of the trachea, which is composed of them, and of an elastic membrane that occupies all the interstices between them; so that the cartilages may be regarded as fixed in this membrane. A similar arrangement of rings exists in the great branches of the bronchia; but after they ramify in the lungs, the cartilages are no longer in the form of rings; they are irregular in their figures, and are so arranged in the membrane that they keep the tube completely open. These portions of cartilage do not continue throughout the whole of the ramifications; for they become smaller, and finally disappear, while the membranous tube continues without them, ramifying minutely, and form the air-cells of the lungs.

At the orifices of the bronchial ramifications, the existence of a semilunar cartilage has been pointed out by Prof. Horner, forming rather more than half of their circumference, and having its concave edge turned upward. These cartilages appear to be intended to keep the orifices open. The membranous portion is very elastic. The elasticity of the lungs is accommodated by this membrane. On the inside of this coat of the trachea is an arrangement of muscular fibres, which may be called a *muscular coat.* It is best seen by pealing off or removing the internal coat, to be next described. On the membranous part of the trachea, where the cartilaginous rings are deficient, these muscular fibres run evidently in a transverse direction; in the spaces between the cartilages their direction is longitudinal.

The internal coat of the trachea is a thin and delicate membrane, perforated with an immense number of small mucous ducts.

At the bifurcation of the trachea and on the bronchea are a

number of black colored bodies, which resemble the lymphatic glands in form and texture. They continue on the ramifications of the bronchia some distance into the substance of the lungs. There is often a very considerable number of them, and they vary in size from three to four lines in diameter.

As lymphatic vessels have been traced to and from them in their course to the thoracic duct, these at the bifurcations are glands for depurating the chyle of its acidulous properties, when they are present.

OF THE LUNGS.

There are two of these organs, each of which occupies one of the great cavities of the thorax.

When placed together in their natural position they resemble the hoof of the ox, with its back part forward; but they are at such a distance from each other, and of such a figure, that they allow the mediastinum and heart to intervene, and they cover every part of the heart anteriorly, except a small portion at the apex.

Each lung completely fills the cavity in which it is placed, and every part of its external surface is in contact with some part of the internal surface of the cavity; but when in a natural and healthy state it is not connected with any part except the lamina of the mediastinum.

The lower extremity or base of each lung rests upon the the pleural lining of the diaphragm, and fills up the angle between the diaphragm and the ribs. The superior projects upwards and backwards along the first rib and above the level of the clavicle, so as to be separated from the scalenus-anticus muscle only by the pleura. In laborious respiration, the elevation of the apex of the lung is increased, and the motion it produces becomes visible at the root of the neck. The external face of the lung is convex, to suit the contour of the thoracic parietes. The internal, and especially that of the left is concave to accommodate the heart and pericardium. The anterior edge is thin and sinuous, and presents on the left side a deep notch fitted to the shape of the heart, and a sort of a lobular projection, which in part covers that organ during deep inspiration.

One great branch of the trachea and the pulmonary artery passes from the mediastinum to each of the lungs, and enters it at a place which is rather nearer to the upper rib than to the diaphragm, and much nearer to the spine than the sternum. At this place the pulmonary veins return from the lungs to the vena cava.

These vessels are enclosed in a membrane, which is continued over them from the mediastinum, and extended from them

to the lung. Thus covered, they constitute what has been called the *root of the lung.*

When their covering, derived from the mediastinum, is removed, the situation of these vessels appears to be such that the bronchia are posterior; the branches of the pulmonary artery are rather above and before, and the veins below are before them. Each of these vessels ramifies before it enters into the substance of the lungs; the bronchia and branches of the pulmonary artery send each a large branch downward to the inferior part of the lungs, from which the lower pulmonary veins pass in a direction nearly horizontal. In general, each of the smaller ramifications of the bronchia in the lungs is attended by an artery and a vein.

Each lung is divided by very deep fissures into portions called *lobes.* The right lung is composed of three of these lobes, and the left lung of two. Each of these lobes is subdivided into many smaller parts called *lobules*, which are marked out on the surface of the lungs by various angular lines. Each bronchium divides into two principal branches for the lobes of the left lung, and into three for the right; after which, a still further subdivision takes place, so that a terminal bronchial branch is sent to each lobule.

The lungs are covered, as has been already stated, with the reflected portion of the pleura continued from the mediastinum, which is very delicate and almost transparent. They have, therefore, a very smooth surface.

The color of the lungs is different in different subjects. In children they are of a light red color; in adults they are often of a light gray, owing to the deposition of a black pigment in the substance immediately under the membranes which form their external surface. Their color is often formed by a mixture of red and black. In this case they are more loaded with blood, and the vessels of the internal membranes being distended with it, the red color is derived from them. The black pigment often appears in round spots of three or four lines in diameter; under the external membrane it is often in much smaller portions, and is sometimes arranged in lines in the interstices of the lobuli, to be hereafter mentioned.

The lungs are of a soft, spongy texture, and, in animals that have breathed, they have always a considerable quantity of air in them. They consist of cells which communicate with the branches of the trachea, that ramify through them in every part. These cells are extremely small, and the membranes which compose them are so thin and delicate that, if they are all filled by an injection of wax, thrown in through the trachea, the whole cellular part of the lung will appear like a mass of wax. These injections prove that the membranes of which the

cells are formed are very thin. These cells are, in fact, but the ultimate termination of the last branches of the bronchia in small, dilated sacs, called the bronchial or *pulmonary air cells.*

If the lungs of the human subject, or of animals of similar construction, be examined when they are inflated, their cellular structure will be very obvious, although their cells are so small that they cannot commonly be distinguished by the naked eye. Each of the extreme ramifications of the bronchia appears to be surrounded by a portion of this cellular substance, which is gradually distended when air is blown into the ramification.

The cellular substance is formed into small portions of various angular figures called *lobuli.* These can be separated to a considerable extent from each other. They are covered by the proper coat of the lungs, which is extremely delicate, and closely connected to the general covering derived from the pleuræ. Between the lobuli, where they are in contact with each other, there is a portion of common cellular substance, which is easily distinguished through the membrane covering the lungs. This is very distinct from the cellular structure which communicates with the ramifications of the bronchia that contain air, for it has no communication with the air unless the proper coat of the lungs be ruptured.

Physiologists and chemists agree that the great object of respiration is to effect a chemical process between the inhaled atmospheric air and the blood that circulates through the lungs in the pulmonary arteries and veins, or from the right to the left side of the heart. The vital arteries that support the lungs arise from the aorta, and traverse the bronchia and ramify the substance of the lungs and all their vessels. The vital nerves arise from the eighth pair or par vagum, and pass in the coats of these arteries to their termina. The great elasticity of the lungs expels the air from them when the diaphragm relaxes, and they are filled by the contractile power of the diaphragm in opposition to their collapsing force.

OF THE PERICARDIUM.

The heart is enclosed by a membranous sac, which, upon a superficial view, seems only connected with its great vessels. The whole of the organ lies unattached in the cavity of the sac, except by the arteries and veins connected with its base. The sac is, in fact, composed of two layers, one external and fibrous and one internal and serous. The latter of these not only lines the inner face of the outer membrane, but is reflected, like other serous membranes, over the roots of the vessels placed in the pericardium, and over the whole outer surface of the heart itself. This internal serous lining is very thin and

delicate, and can only be raised in small shreds, either from the outer layer of the pericardium, or from the heart. If it were dissected from the heart, without laceration or wounding, it would be an entire sac.

The pericaridum, thus arranged, is placed between the two lamina of the mediastinum, and adheres firmly to them where they are contiguous to it; it also adheres firmly to the diaphragm below, and thus preserves the heart in its proper position.

The figure of the pericardium when it is distended is somewhat conical; its apex being on the diaphragm. The cavity formed by it is larger than the heart after death, but it is probable that the heart nearly fills it during life, for when this organ is distended by injection, it often occupies the whole of the pericardium.

The attachment of the pericardium to the diaphragm is exactly over the cordiform tendon of the latter. The sides of the pericardium are covered in part by the pleura, which gives the sac the appearance of being formed by these tunics.

Underneath the pleural lining is found the phrenic nerve, and, in fat subjects, much adipose matter.

The pericardium is composed of two lamina, the internal of which covers the heart, as has been already described; while the external merely extends over the loose portion of the other, and blends with the mediastinum, where that membrane invests the great vessels. Its principal attachment or termination above, is upon the arteries and veins entering the heart, (except the vena cava inferior) over which it sends tubular prolongations, which gradually blend with their external coats. Between these prolongations, on the inside of the sac, hollow pouches are necessarily left, which are called the *cornua* of the pericardium.

The fibrous layer of the pericardium resembles in structure and appearance the dura mater of the brain. The arteries of the pericaridium are very small; they are derived from the phrenic, bronchial and œsophagal, and from the aorta. Its veins terminate in the vena azygos. Its nerves are few and small, and originate from the cardiac plexus. The internal surface of the pericardium is very smooth and polished; and in the living subject is constantly moistened by a fluid which is exhaled from its serous surface. The quantity of this fluid does not commonly exceed two drachms; but in cases of disease it sometimes amounts to many ounces. It is nearly transparent, but slightly tinged with red in children, and yellow in old persons. It is often slightly tinged with red in persons who have died by violence.

OF THE HEART.

The great organ of the circulation consists of muscular

fibres, which are so arranged that they give it a conical form, and compose four distinct cavities within it.

Two of these cavities, which are called *Auricles*, receive the contents of the veins; the other two communicate with the arteries, and are called *Ventricles.* The auricles form the base of the cone ; the ventricles the body and apex.

The structure of the auricles is much less firm than that of the ventricles, and consists of a smaller proportion of muscular fibres. They appear like appendages of the heart, while the ventricles compose the body of the viscus.

The ventricles are very thick, and are composed of muscular fibres, closely compacted.

The figure of the heart is not regularly conical ; for a portion of it, extending from the apex to the base, is flattened ; and, in its natural position, this flat part of the surface is downwards. It is placed obliquely inclined in the body, so that its base presents backward and to the right, and its apex downward, forward, and to the left. That portion called the right side of the heart, and that receives the blood from the venæ cavæ, is nearly anterior, while the left, that receives the blood from the lungs, is nearly posterior. The two great veins called the ascending and descending venæ cavæ, which bring back the blood from every part of the body, and also the chyle, open into the right auricle from above and below; the right auricle opens into the right ventricle; and from this ventricle arises the artery, denominated *pulmonary*, which passes the blood to the lungs.

The *pulmonary veins*, which bring back the blood from the lungs, open into the left auricle; this auricle opens into the left ventricle; and from this ventricle proceeds the *aorta*, or great artery which carries blood to every part of the body.

The heart is preserved in its position, first, by the venæ cavæ, which are connected to all the parts with which they are contiguous in their course; second, by the vessels which pass between it and the lungs, which are retained in a particular position by the mediastinum ; third, by the aorta, which is attached to the mediastinum in its course downwards, after making its great curve; and fourth, by the pericardium, which is attached to the great vessels and to the mediastinum. By these different modes the basis of the heart is fixed, while its body and apex are perfectly free from attachment, and only contiguous to the pericardium. The external surface of the heart, being in contact with the serous layer of the pericardium, is very smooth.

The two auricles are contiguous to each other at the base, and are separated by a partition which is common to both.

The *right auricle* originates from the junction of the two

venæ cavæ. These veins are united at some distance behind the right ventricle, and are dilated anteriorly into a sac or pouch, which is called the *sinus*, and extends to the right ventricle, to which it is united.

The upper part of this pouch, or sinus, forms a point with indented edges, which is detached from the ventricle, but lies loose on the right side of the aorta. This point has some resemblance to the ear of a dog, from which circumstance the whole cavity has been called *auricle;* but by many anatomists the cavity is considered as consisting of two portions: the *auricle*, strictly speaking, and the *sinus venosus* above described. They, however, form but one cavity. This portion of the heart, or *right auricle*, is of an irregular oblong figure. In its posterior surface it is indented; for the direction of the two cavæ, at their junction, is not precisely the same; but they form an angle which causes this indentation. The anterior portion of the auricles, or that which appears like a pouch between the ventricle and the veins, is different in its structure from the posterior part, which is strictly a portion of the veins. It consists simply of muscular fibres, which are arranged in fasciculi that cover the whole of the internal surface. This is also the case with the point, or that part which is strictly called *auricle*. These fasciculi are denominated *musculi pectinati*, from their resemblance to the teeth of a comb.

That part of the internal surface which is formed by the septum is smooth, and the whole is covered by a delicate membrane.

On the surface of the septum below the middle, is an oval depression, which has a thick edge, or margin; this is called the *fossa ovalis*. In the fœtal heart, it was the *foramen ovale*, or aperture which forms the communication between the two auricles.

Near this fossa is a large semilunar plait, or valve, with its points and concave edge uppermost, and convex edge downwards. It was described by Eustachius, and therefore is called the *valve* of *Eustachius*. It commences at the lower surface of the opening of the interior vena cava, and runs forward to terminate below the fossa ovalis. It served in the fœtus to obstruct the passage of the venous blood from the right auricle into the right ventricle, and to direct it, in a great measure, through the foramen ovale.

Anterior to this valve, and near the union of the auricle and ventricle, is the orifice of the proper vein of the heart, or the *coronary vein*. This orifice is covered by another semilunar valve, which is sometimes reticulated. The aperture, which forms the communication between the right auricle and the right ventricle, is about an inch in diameter, and is called

ostium venosum. From its whole margin arises a valvular ring, or duplicature of the membrane lining the surface. This circular valve is divided into three angular portions, which are called *valvulæ* tricuspides. From their margins proceed a great number of fine tendinous threads, which are connected to a number of distinct portions of muscular substance, which arise from the ventricle.

The *right ventricle*, when examined separately from the other parts of the heart, is rather triangular in its figure. It is composed entirely of muscular fibres closely compacted, and is much thicker than the auricle, although not so thick as the ventricle. Its internal surface is composed of bundles, or columns of fleshy fibres, which are of various thickness and length. Some of these columns (*columnæ carnæ*) arise from the ventricle, and are connected with the tendinous threads, (*chordæ-tendineæ*,) which are attached to the margin of the tricuspid valves. The direction of them is from the apex of the heart toward the base. Others of the columns arise from one part of the surface of the ventricle, and are inserted into another part. A third species are attached to the ventricle throughout their whole length, forming ridges or eminences on it. The columns of the two last described species are very numerous. They present an elegant reticulated surface when the ventricle is laid open, and appear also to occupy a considerable portion of the cavity of the heart, some of which run across near the apex of the heart in every direction. They are all covered by a membrane continued from the auricle and tricuspid valves; but this membrane appears more transparent in the ventricle than it is in the auricle.

This is called the internal serous, or endocardial lining membrane of the heart. On the right side it is contiguous with that of the veins and pulmonary artery; on the left with the aorta and pulmonary veins. It is extremely thin, smooth, and transparent, covers all the interior surface of the cavities of the heart, and, by being thrown into folds, with some fibrous matter interposed between the layers to increase their strength, constitutes the valves.

A portion of the internal surface of the ventricle, which is to the left, is much smoother and less fasciculated: it leads to the orifice of the pulmonary artery, which arises from it near the basis of the ventricle. This artery is very conspicuous, externally, at the base of the heart. It is very evident, upon the first inspection of the heart, that the valvulæ tricuspides will permit the blood to flow from the auricle to the ventricle; but must rise and close the orifice, and thereby prevent its passage back again when the ventricle contracts.

The use of the tendinous threads, which connect the valves

to the fleshy columns, is also very evident. The valve is supported by this connection, and prevented from yielding to the pressure that tends to open a passage into the auricle. The blood, therefore, upon the contraction of the ventricle, is necessarily forced into the pulmonary artery, the passage to which is now perfectly free. In this artery the membrane lining the ventricle seems continued; but immediately within the orifice of the artery it is formed into three semi-circular folds, each of which adheres to the surface of the artery by its circumference, while the edge constituting its central diameter is loose. In the middle of the loose edge is a small, firm tubercle, called *corpusculum arantii*, which adds to the strength of the valve. Each of these valves, by its connection with the artery, forms a sac, or pocket, the orifice of which opens forward towards the course of the artery, and the bottom of it presents towards the ventricle. Blood will, therefore, pass from the ventricle into the artery, and along it without filling these sacs; and, on the contrary, in this course will compress them and keep them empty. If it moves in the artery towards the heart, it will necessarily fill these sacs, and press the semicircular portions from the sides of the artery, against each other. By this means a partition or septum consisting of three portions, will be formed between the artery and the heart, which will always exist when the artery acts upon its contents. These valves are concave towards the artery and convex towards the heart, and this convexity is composed of three parts, each of which is convex.

At the place where these valves are fixed, the artery bulges out when extended by a retrograde injection. The enlargements thus produced are called the sinuses of Valsalva. The valves are called *semilunar*, and, although they are formed by a very thin membrane, they are very strong. The *left auricle* is situated on the left side of the base of the heart. It originates from the junction of the four pulmonary veins, two of which come from each side of the thorax and appear to form a large part of it. It is nearly of a cubic form, but has also an angular portion which constitutes the proper auricle, that proceeds from the upper and left part of the cavity, and is situated on the left side of the pulmonary artery. This auricle is lined by a small membrane, from which the valves between it and the ventricle originate; but it has no fleshy columns, or musculi pectinati, except in the angular process properly called auricle.

These valves, and the orifice communicating with the ventricle, resemble those which have been already between the right auricle and the ventricle; but with this difference, that the valvular ring is divided into two parts only, instead of three

which are called *valvulæ mitrales.* The tendinous threads, which are connected to the muscular columns, are also attached to these valves, as in the case of the right auricle.

These valves admit the passage of the blood from the aurical into the ventricle, but completely prevent its return when the ventricle contracts. One of them is so situated that it covers the mouth of the aorta while the blood is flowing into the ventricle, and leaves that orifice open when the ventricle contracts, and the passage to the auricle is closed. The left ventricle is situated posteriorly and to the left of the right ventricle. Its figure is different, for it is rather conical, and it is also longer. The internal surface of this ventricle resembles that of the right ventricle; but the columnæ carneæ are stronger and larger. On the right side of this ventricle is the mouth of the aorta.

The functional nerves of the heart are derived from the superior cardiac plexus. It receives its vital nerves from the eighth pair that ramify with the arteries that arise from the aorta immediately outside of the heart, and ramify from the base to the apex, the returning veins of which empty into the lower part of the right ventricle.

OF THE DIAPHRAGM.

This great respiratory power is a compound muscle that forms a complete separation between the thorax and abdomen. It is convex above and concave below; the middle of it reaching as high within the thorax as the fourth rib. It is commonly divided into two portions for description: the superior or *great muscle* and the inferior or *lesser muscle.*

The *great muscle of the diaphragm* arises by distinct fleshy fibres, from the cartilago-ensiformis, from the cartilages of the seventh, and of all the inferior ribs on both sides. The fibres from the cartilago-ensiformis, and from the seventh and eighth ribs, run obliquely upwards and backwards; from the ninth and tenth transversely inwards and upwards, and from the eleventh and twelfth obliquely upwards. From these different origins the diaphragmatic muscular fibres run like radii from the circumference to the centre of a circle, and are *inserted* into a cordiform tendon, of a considerable breadth, which is situated in the middle of the diaphragm, and in which, therefore, the fibres from opposite sides are interlaced. Towards the right side the tendon is perforated by a triangular hole for the passage of the vena cava inferior; and to the upper convex part the pericardium and mediastinum are attached to it. The inferior lesser muscle, or the *appendix of the diaphragm,* arises from the second, third and fourth lumbar vertebræ, by eight heads, of which two in the middle, commonly called its *crura,*

are the longest, and begin tendinous. Between these crura the aorta and thoracic duct passes; and on the outside of these, the great sympathic nerves and branches of the vena azygos perforate the shorter heads; and at this point the sympathetic nerves send out their branches of involuntary motion to ramify this organ. The muscular fibres run obliquely upwards and forwards, and form in the middle two fleshy columns, which decussate and leave an open space between them for the passage of the œsophagus and eighth pair of nerves. Two bow-shaped ligaments are formed on either side at the lower border of this muscle, which are *inserted* by strong fleshy fibres into the posterior part of the middle tendon.

The diaphragm is the organ designed in its contracting and relaxing movements to do one-half of the work of respiration. The contractile force of this muscle enlarges the cavity of the thorax, and as that is a short sac in which no air can enter between it and the lungs, and as the lungs are elastic and perforated for atmospheric inhalation, their elasticity is overpowered and the lungs filled with air. This is called *inspiration;* and the relaxation of the diaphragm gives to the lungs the work of contracting by their elastic force and expelling the air from the lungs. This is called expiration. Consequently the work of respiration is divided between these two contractile forces;—the greater contractile force of the diaphragm for inflating the lungs, and the lesser contractile force of the lungs for expelling the air.

The diaphragm is constantly under the control of the nerves of involuntary motion; it is also under the control of volition to a certain extent through the agency of the phrenic nerves.

Since the time when the immortal Harvey first discovered the circulation of the blood, the modus operandi by which the blood is transferred in the lungs from the pulmonary arterial capillaries to those of the venous, has been a matter that has elicited much attention by anatomists and physiologists; and as these vessels are too minute to be observable in the cadaver, many theories have been suggested by which this process might be effected; and the one most generally received presumes that the two capillary systems ramify in the outer coat of the air cells, and at the points of their union the work of hematosis is effected, through the medium of the internal membrane of the air cells that lies between these capillary vesels and the air in the cells.

This supposition is predicated upon and strengthened by the fact that these capillary vessels ramify to the air cells, and that the blood is kept securely in its circulating vessels, without any escape into the air cells.

Beginning the subject of the capillary transfer of the blood

through the lungs, we first find the blood forced into the pulmonary artery by the contracting force of the right ventricle of the heart. Secondly, we find the pulmonary artery ramifying in the lungs in their passage to the air cells. These ramifications diminish in calibre in proportion to their multiplication, until their calibre is reduced to 1-1200 of an inch. The size of the blood globules is estimated to be 1-2300 of an inch, and that of the air cells 1-100 of an inch, when dilated. The object of selecting a fine material for constructing the globules in a definite symmetrical die is achieved in these capillary arteries near their termina at the air cells. Other molecules join with those furnished by the functional nerve to form the coats of these globules preparatory to receiving the hæmatine. In this chemical work of depositing the hæmatine, we find caloric and electricity evolved. The caloric is used for raising and keeping up the thermal standard of the system; the latter goes to furnish the electric deposit in the brain, called *neurine*.

The texture of the membrane of the air cell is composed of the finest fibre extended from the mucous membrane of the bronchia. The texture of its tissuary fibre is too fine to permit the escape of the blood globules through its meshes, but not too fine for the ingress of oxygen gas or the escape of carbonic acid gas when distended by this species of combustion that is controlled and extinguished by the carbonic acid gas generated in the chemical transaction that transpires in it. This *pulmonary transit centre* receives the afferent blood from the pulmonary capillary artery when the cell is collapsing; and at each inflation of the cell it is arterialized and transferred to the efferent circulation in the capillary veins. Just when the lung reaches its normally full inflation, the functional nerve ignites the combustible material in this transit vessel, and in the act it furnishes the element to chemically charge the blood globules with their red sanguineous element. In this formula, the intermitting charge of electric element sent to the transferring vehicle ignites the carbon in it, and the combustion is supported by the oxygen contained in the air that fills the cell, and the control of the thermal temperature is divided between the exhausting oxygen and the extinguishing effects of the accumulating carbonic acid gas being generated by the combustion, and that derived from nutrition.

In this chemical work two compositions are effected: one from the combination of oxygen with the electric molecules, called the red-pigment or *hœmatine*, and the other by the union of oxygen with carbon forming carbonic acid gas. The blood globules retain the *hœmatine*, and the carbonic acid gas is exhaled in the outward breath.

When these small blood globules traverse the capillaries they are arranged in rows. The contracting force of the right ventricle of the heart sends the blood to this transit in the lungs, and the expansive force of the left ventricle draws it from this point of transfer through the pulmonary veins into its ventricle, from whence it is sent through the vital arterial system to nourish all parts of the system.

Security is taken to prevent a retrograde motion of the circulation by placing valves betwen the auricles and the ventricles.

Security is also taken in the arrangement of the heart into a double viscus to control a concert of movement of the two dynamic forces resident in the two ventricles, by putting them under the control of one nervous arrangement for contraction. This concert of action secures a uniform circulation through the lungs, as well as keeps the balance of the circulation between the venous and arterial systems in all parts of the body.

DIAPHRAGMATIC MOTION.

The involuntary motion of this muscle has been a hidden mystery in regard to the cause of its alternate uniform contractions and relaxations; it is one that has hitherto been too subtle for our most talented physiologists; it is one that requires as much scrutiny to detect its hidden power as that of hæmatosis.

The great sympathetic nerves have charge over the functional work of all the organs in the chest. The superior cardiac branches direct the involuntary motion of the heart. The middle cardiacs direct the chemical work of hæmatosis in the lungs; and where these two sympathic trunks perforate the diaphragm they send off the involuntary nerves to this muscle that governs its muscular action in doing its share of the work of respiration. The nerves that furnish the electricity for hæmatosis in the lungs and those which operate to contract the diaphragm are in sympathy with each other, and perform an intermitting work with both the lungs and diaphragm, that alternate with each other in action, and in expending the electric element derived from the same source. Consequently these three organs—the lungs, heart and diaphragm, are under the control of the genius of this sympathetic nervous system, to circulate the blood, and vitalize it in its passage through the lungs. While the heart controls the circulation alone, the work of hæmatosis is divided between the lungs and the diaphragm, in the following way:

The contraction of the diaphragm inflates the lungs with vital air, at the moment when the lungs are inflated to their normal maximum (as in sleep, when volition does not inter-

fere.) The pulmonary nerves contribute their electric charge to ignite the carbon in the transit vessels to vitalize the blood; and as there are not less than four millions of air cells in each cubic inch of the lungs, the exhaustion of the nervous electricity is complete for the time. This nervous expenditure relieves the contractile force of the diaphragm, and relaxes and leaves the elastic contractile force of the lungs to expel the air. During the subsidence of the lungs the nervous supply is recuperating, and very soon after the lungs have reached a complete state of collapse, the diaphragm begins gently to contract, and when it is at its maximum it is again relieved by exhaustion from the pulmonary nerves.

The intermittent action of the pulmonary nerves is dependent upon the following circumstances:

The air cells have fine tubes that lead to them, which comprise the most elastic portion of the lungs, and is the part in which the vacuum first exerts its inflating force under the power of the muscular contraction of the diaphragm; consequently its dilating force first expands the air cells and the fine elastic tubes that lead to them, and by this expanding force the air rushes in to fill the vacuum; and as the air cells are thus constituted the magazines of the vacuum they are the last parts to be filled with air; consequently the air cells are not filled until the lungs receive their full inflation. Consequently the appearance of the oxygen in the air cells furnishes the moment for the nervous expenditure when all the elements are present to elicit it for combustion.

The presence of the oxygen contained in the air upon the tensely distended air cells induces the nervous emission, which transaction is not very dissimilar to that which transpires in the heart that commands the contractile force of that viscus for the circulation of the blood.

From the provisional structure of the heart comes its fine sensibility; and this provisional principle not only pertains to the heart and pulmonary air cells, but to every part of the living being.

THE ABDOMEN AND ITS VISCERA.

This great cavity occupies more than half of the space enclosed by the ribs, and all the interior of the trunk of the body below the thorax.

It is bounded above by the diaphragm, which is supported by the lower ribs; by a portion of the spine and its adjoining muscles, behind; and on the front and sides by the various muscles which occur between the lower margin of the thorax and the upper margin of the ossa innominata. These bones contribute, by means of the costal of the ossa ilia, to form the

lateral walls. The pelvis forms the lower boundary. The abdomen contains:

1st. *The stomach and the whole intestinal tube*, consisting of the small and great intestines.

2nd. The assisting chylopoietic viscera—the liver, pancreas, and the spleen.

3rd. The renal organs—the kidneys, the ureters, and the bladder.

4th. The organs of generative import; those of the female sex, being almost wholly included in the pelvis; and those of the male, being situated partly within and partly without it.

5th. The peritoneum and its various processes—the mesentery, omentum, etc.

6th. A *portion of the aorta*, and almost the whole of the inferior vena cava and their branches, as are appropriated to the viscera of the abdomen and pelvis.

7th. Those portions of the par vagum and intercostal nerves which are appropriated to the cavity; and portions of some of the nerves destined to the lower extremities.

8th. The lower part of the *thoracic duct*, or the great trunk of the absorbent system, with the large branches that compose it, and the glands connected with them—the lacteals and the mesenteric glands.

DIVISIONS OF THE ABDOMEN.

As the cavity of the abdomen has no natural division, anatomists have divided it by imaginary lines into various regions, with a view to precision in their accounts of the situation of the different contained parts.

Thus they have very generally agreed to draw two transverse lines across the abdomen, to form three great divisions, viz: the *upper*, *middle* and *lower;* and they have also divided each of these into three regions. The three regions of the uppermost division are defined with precision, those on each side of which are called the *right* and *left hypochondriac regions*, occupy the space immediately within the lower ribs and their cartilages, while the middle space, included within the margins of these cartilages and a line drawn from the lower ribs on one side to that on the other side, is denominated the epigastric region.

The lower tranverse line is drawn from the top of one ilium or hip to the other.

These two lines will mark the three great divisions. If, then, two parallel lines are drawn directly upwards, one from each of the superior anterior spinous processes of the ilium, (or from the inside of each hip) until it touched the lower margin of the ribs, they will divide each of the two lower di-

visions of the abdomen into three regions. The centre of the middle division is the *umbilical*, and on each side is the right and left iliac region.

There are therefore nine of these regions. And I will here remark that the space around the end of the sternum is sometimes called the *scrobiculus cordis;* and the space immediately within and above the os pubis—the regio pubis.

These different regions are occupied in the following manner:

The liver fills the right hypochondriac region, and extends through the upper part of the epigastric region into the left hypochondriac. The stomach occupies the principal part of the epigastric region and a considerable portion of the left hypochondriac.

The spleen is also situated in the left hypochondriac region.

That portion of the intestinal tube which is composed of the small intestines is generally found in the umbilical, the hypogastric and the iliac regions, and when the bladder is empty in the pelvis. But the duodenum, or first of the small intestines, which proceeds immediately from the stomach, is situated in the epigastric and umbilical regions.

The great intestines commence in or near the right iliac region, and ascend through the right lumbar to the right hypochondriac region. It then crosses the abdomen, passing through the lower part of the epigastric or upper part of the umbilical to the left lumbar region; from thence it descends into the left iliac region; it then curves abruptly backward and to the right in the form of the letter *s*, producing what is called the sigmoid flexure of the colon, when it descends into the pelvis, and continues to form the rectum, and terminates at the lower end of the spine.

At the back part of the epigastric region, and very low down in it, is situated the pancreas. The kidneys lie in the most posterior parts of the lumbar regions, and from each of them is continued a tube or duct called *ureter*, that passes into the pelvis to carry the urine into the bladder. This viscus in males is in contact with the last portion of the great intestine called the *rectum*, and with it occupies almost all of the cavity of the pelvis, while in females the uterus and its appendages are situated between this intestine and the bladder.

In the posterior part of the abdomen, in contact with the spine, is the *aorta*. This great blood vessel passes from the thorax between the crura of the diaphragm, and continues down the spine until it approaches the margin of the pelvis, when it divides into two great branches called the *iliac arteries*. Each of these great branches divides again on the side of the pelvis into two: namely, the *external iliac*, which passes under

the crural arch to the thigh, and the *internal iliac or hypogastric*, which descends into the cavity of the pelvis.

Soon after the arrival of the aorta in the abdomen, it gives off two large branches. The first, which is the *cœliac*, is distributed to the liver, the stomach and the spleen ; the second, called the *superior mesenteric*, is spent upon the intestines. Lower down in the abdomen it also sends off a small branch for the intestines, called the *inferior mesenteric.* Besides these vessels for the chylopoietic viscera, the aorta sends off a large branch called *emulgent*, to each kidney.

The inferior or ascending vena cava is situated on the right of the aorta in front of the spine. It is formed below by the union of the iliac veins, and on its passage upwards it receives the emulgent veins from the kidneys ; but it receives in its course no veins which correspond directly with the cœliac and mesenteric arteries. The small veins, that answer to the branches of these arteries, unite and form one large vein which goes to the liver ; it is called the *vena portarum.*

From the liver the large veins pass into the vena cava and there deposit the blood of the vena portarum after it has furnished materials for the secretion of bile. The vena cava, in its passage upwards, is in close contact with the posterior thick edge of the liver. It often passes along a deep groove in its edges, and sometimes it is completely surrounded by the liver in its course. The veins of the liver enter the vena cava at this place, and of course they are not to be seen without dissection. Immediately after leaving the liver, the vena cava passes through an aperture in the tendinous centre of the diaphragm to unite itself to the right auricle of the heart.

The *peritoneum* lines the walls of the abdomen, and it is reflected over nearly all of the organs therein contained. In its character it is a simple membrane, white in appearance and of a firm texture, and belongs to the order of serous membranes. It furnishes the serous fluid to lubricate the surface of all the organs in the abdomen that move upon each other, thereby preventing any injury by friction.

It supports the viscera of the abdomen in their proper position. The cellular substance by which the peritoneum is connected to the contiguous parts is very different in different places. It is very short, indeed, between this membrane and the stomach, and intestines, and between it and the tendinous centre of the diaphragm. Between the peritoneum and the muscles generally it is much longer. Where it covers the kidneys and the psoas muscles it is very lax and yielding. About the kidneys a larger quantity of adeps or fat very commonly collects in it. On the psoas muscles it yields with but little resistance to the passage of pus or any other effused fluid, as

in the case of psoas abscess. The peritoneum abounds with absorbent vessels, and therefore possesses the power of absorption to a great degree.

This power may be inferred, not only from the spontaneous removal of the fluid of ascites, but if milk and water be introduced into the abdomen of a living animal, through a puncture, it will also disappear. It receives its blood vessels from the neighboring parts, and in a healthy state it has little or no sensibility.

Some of the viscera are much more completely invested with the peritoneum than others. The stomach, liver and spleen are almost completely surrounded by it. That portion of the smaller intestinal tubes which is called *jejunum* and *ileum*, and the transverse portions of the large intestines, called the *arch* of the *colon*, are invested with it in the same way. But a considerable portion of the duodenum and the pancreas is behind it. The lateral portions of the colon are in close contact with the posterior surface of the abdomen, and the peritoneum only covers that portion of their surfaces which looks anteriorly towards the cavity of the abdomen, and is not in contact with their posterior surface.

The urinary organs are not much connected with the peritoneum. The kidneys and ureters appear exterior to it and behind it. The urinary bladder is below it, and has only a partial covering from it on its upper portion.

The peritoneum which covers the stomach is extended from the great curvature of that organ so as to form a large membrane, which descends like an apron before the intestines. This process of peritoneum is composed of two lamina, so thin and delicate as to resemble cellular membranes, which after extending downwards to the lower part of the abdomen, are turned backwards and upwards, and proceed in that direction until they arrive at the colon, which they enclose, and continue to the back of the abdomen, forming the mesocolon. The part of this process which is between the stomach and the colon is called the *epiploon* or *omentum*.

OF THE LIVER.

This largest viscus of the abdomen, when in a healthy state, is of a reddish brown color. If it is taken out of the subject, and laid on a flat surface, it is flat, but in the abdomen it is convex above and concave beneath. It is situated in the right hypochondriac region, which it occupies entirely, and extends through the upper portion of the epigastric into the left hypochondriac region. Being placed immediately under the diaphragm, and in close contact with it, it partakes of its form. When thus situated it is of an irregular figure, between the

circular and the oval, but is broader at the right extremity than at the left, and very irregular in thickness. The edge or margin which is in contact with the posterior part of the right hypochondriac region, is very thick. It generally becomes thinner towards the left, and also towards the front; so that the right margin is very thick, while the left and anterior margin is thin.

The upper convex surface of the liver is smooth; the lower concave surface is marked by several grooves or fissures, and eminences. One of these, called *umbilical*, or the great fissure, commences in the notch of the anterior edge of the liver, to the left of the middle, and continues to the posterior edge. At the commencement of this fissure the umbilical ligament enters, and at the termination, or near it, the vena cava is situated. Opposite to this fissure, on the upper convex surface, is a ligament passing from the diaphragm to the liver, which is called the *falciform*. The fissure and the ligament divide the liver into its two great lobes—the *right* and *left*. Another great *fissure* called the *transverse* or *principal*, commences on the right lobe and extends to the left, crossing the first mentioned fissure at right angles, and extending a very short distance beyond it. It is rather deep, and rather nearer to the posterior than the anterior edge of the liver. In this fissure, near to its right extremity, the great vein, called the *vena portarum*, and the hepatic artery enter, and the excretory duct of the liver, commonly called the *hepatic duct*, comes out. About the middle of the fissure are two prominences, one on each side. These were called the portæ or gates of the liver, and hence the great vein that enters the liver was called *vena portarum*. This vein has two very large rectangular branches, which constitute what is called the *sinus* of the vena portarum. They occupy the principal extent of the fissures. The liver is in close contact with the vena cava behind, and there is either a groove in it for the passage of the vein, or this great vessel is completely enclosed by it. There is also an excavation on the lower surface of the liver, which is occupied by a portion of the gall bladder.

Besides the great lobes above mentioned, there are also two or three prominent parts in the concave surface, which are denominated lobes. One of these, called *lobulus Spigelii*, is oblong with two sides, and an angle continued along its whole length, which extends from the transverse fissure on the posterior margin of the liver. It is situated between the posterior part of the transverse fissure, or ductus venosus, and the vena cava.

The anterior extremity of this lobe, which forms one of the margins of the transverse fissure, is somewhat bifurcated, and

has been called lobulus caudatus. The largest portion of the bifurcated end forms a process like a papillæ, and is one of the portæ.

Between the umbilical fissure and the depression for the gall bladder is a protuberant space, which varies from an inch and one-quarter to two inches in breadth. This has been called a lobe—*lobulus quartus* or *anonymous*. Its posterior point, opposite the papillæ of the lobulus Spigelii, forms the other portæ of the liver.

The peritoneum is extended from the surface of the abdomen to the surface of the liver, in such manner as to cover it, and to form ligaments, which have a great effect in retaining it in its proper situation. The whole posterior edge of the liver is in contact with the back part of the abdomen. The peritoneum above the liver is reflected to the upper surface of it, and the peritoneum below it to its lower surface; so that two lamina of the peritoneum pass from the lower part of the diaphragm at the back of the abdomen to the posterior edge of the liver.

These processes of the peritoneum are considered as forming two ligaments which are called the *right* and *left lateral ligaments*. A portion of the posterior surface of the liver uncovered by the peritoneum is often in contact with a portion of the tendon of the diaphragm, which is also uncovered by the peritoneum around this place of contact; the peritoneum is extended from the diaphragm to the liver, and thus forms what has been called the *coronary* ligament of the liver.

The peritoneum of the right side of the diaphragm, and of the abdominal muscles as far down as the umbilicus, is extended to the liver, and joins it on the convex surface immediately opposite to the umbilical fissure. The peritoneum from the left side of these parts does the same, and as these reflections of the peritoneum are continued from so low a part as the umbilicus, they are not only extended to the convex surface, but to the great notch and along the umbilical fissure. From the umbilicus proceeds a round cord-like ligament, which in the fœtal state was a vein that passes to the great fissure of the liver and along it. The process of the peritoneum above mentioned is so connected with this cord that it encloses it in its lower edge, and the whole is called the *falciform* ligament of the liver. The cord, when named separately, is the *umbilical*, or *round* ligament; and the membrane or lamina of the peritoneum form the *suspensory* ligament. Besides these the peritoneum on the lower side of the liver is so arranged that it not only extends to the stomach but to the duodenum and the colon.

By these ligaments the position of the liver must be fixed to

a degree. There is one additional connection which must have a great effect in retaining it in its proper situation. The vena cava receives two or three great veins from the liver (*vena cava hepatica*) at the place where it is in contact with the posterior edge of that viscus. These veins of course pass directly from the substance of the liver into the cava, and connect it to that vessel. As the cava is supported by the heart and also by the diaphragm, it must afford a considerable support to the liver.

When the stomach and intestines are distended, they must also contribute in a considerable degree to the support of the liver. As it is in contact with the diaphragm, it is obvious that it must be influenced by the motions of that muscle, and it must descend when the diaphragm contracts.

The liver is composed of a substance which has some firmness of consistency although it is yielding, and somewhat brittle or friable. When cut into it, the sections of many tubes, or vessels of different diameters, appear on the cut surface. When the texture of this substance is more closely examined, it appears somewhat granulated, or composed of very small bodies, which were called *acini* by the anatomist who first discovered them.

The liver holds the first place for the size among the glands of the body; it is still more remarkable for some other circumstances in its economy. In addition to the artery, which passes to it as arteries do to other glands, there is a large vein (*vena portarum*) which also enters it as an artery; and after ramifying through the liver, communicates, as does the artery, with other veins which carry the blood from this gland into the vena cava and the general circulation. There are therefore three species of blood vessels in the liver, and with these are found the vessels which carry out the secreted bile.

The artery of the liver is denominated the *hepatic artery*. The vein which goes to the liver is called the *vena portarum*, from the place where it enters. The veins which carry to the vena cava the blood brought to the liver by the hepatic artery and the vena portarum are called the *hepatic veins*. And the duct through which the bile flows out of the liver is called the hepatic duct.

Three of these vessels—the *hepatic artery*, the *vena portarum* and the *hepatic duct*—enter the liver at the great fissure at the place where the prominence exists, called the *portæ;* hence the name vena portarum was applied to the veins.

These vessels ramify in the manner presently to be described. It is ascertained by minute anatomical investigations, that the liver is entirely composed of the ramifications of these described vessels and nerves, which are connected together by cellular membranes.

It has been already observed that the first great branch sent off by the artery into the abdomen, the *cœliac*, divides into three branches, which go respectively to the stomach, liver and spleen. The hepatic is the largest of these branches. In its passage towards the liver it sends off an artery to the stomach, called the *gastrica dextra*. At the great fissure it divides into two branches. The right branch which supplies the right lobe of the liver is of course the largest. This branch sends off one to the gall bladder which is called the *cystic artery*, and also some small branches. It passes under the hepatic duct and ramifies through the great lobe of the liver. The left branch ramifies through the left lobe of the viscus. It can be proved by injections that the hepatic artery communicates not only with the hepatic veins but with the biliary duct and the vena portarum also, or at least that they center upon the same point where the work of nutrition and biliary secretion is effected. At these terminal points very minute granule, called *acini*, appear under microscopic observation. In them, two systems of nerves and three systems of blood vessels meet to sustain the organ and to perform the vital work assigned to this viscus.

The arterial blood contributes to the sustentation of the vessels, nerves, membranes and ligaments, of which the liver is composed, aided by the pneumogastric, or eighth pair of nerves. The portal circulation contributes the element from which the bile is secreted, aided by the ganglionic functional nerves. Two systems of circulating vessels enter the liver and ramify it with their minute capillary branches—the *arterial* and the *portal*. Each of these systems have their corresponding capillary veins. These veins which arise from their two separate circulating systems, in their course to the vena cava, anastamose with each other, and form the hepatic veins which discharge these two kinds of hepatic venous blood in a mixed state into the vena cava ascendens.

Capillary ducts also arise from the termina of the portal circulation to carry forward the secreted bile into the great biliary duct or sinus.

From this duct the cystic duct arises that connects with the gall bladder, and through which the bile sets back from this great duct into it. After uniting with the cystic duct it is called ductus *communis choledochus*.

The great biliary duct or sinus in its physiological habits needs an explanation to account for the reason why the bile passes into the cyst at any time rather than into the duodenum. I will here remark that this great duct is a biliary sinus designed to retain the secreted bile to be given off into the duodenum when it is filled with food. By distending the stomach and

the duodenum with food, more pressure is made upon the liver and gall bladder than when they are empty and in their collapsed condition. During the process of digestion this duct is carrying the bile into the duodenum by means of the mouth or orifice of this duct, which is opened by a provision in the erectile state of the duodenum when chyme enters it from the stomach.

This sinus and gall bladder not only furnish a reservoir for the bile but for the pancreatic juice; also when these ducts unite.

THE PANCREAS.

The pancreas, or sweet bread, is a glandular organ that secretes a juice called *succus pancreaticus* or *pancreatic juice.* Its average length is about seven inches, and it is irregularly oblong in its form. Its largest extremity is in contact with the duodenum, and it extends from this intestine in a transverse direction behind the stomach to the spleen, to which it is connected by the omentum and by blood vessels. It is not invested by the peritoneum, but is situated in the space which exists between the two lamina of the mesocolon, as they proceed from the back of the abdomen, before they come in contact with each other. It is anterior to the aorta and vena cava and to the mesenteric vein or main branch of the vena portarum, being connected to these parts by cellular membrane. At the right extremity, which is connected with the duodenum, is a process of the gland that extends downward in close contact with the intestine. This is called the head of the pancreas, its lower edge inclining forward and its upper edge backward, is much thicker than the lower edge, and has in it a groove or excavation which is occupied by the splenic blood vessels. The arterial blood of this gland is partly supplied by the splenic artery, which, in its course from the main trunk of the cœliac to the spleen, while it is in the groove at the edge of the pancreas, sends off into the gland one considerable branch called the great pancreatic, and a number of small branches which go off in succession. In addition to these the pancreas receives vessels from one of the branches of the hepatic artery before it sends off its great ramifications. It also receives some small twigs from several other contiguous arteries. The veins correspond with the arteries, but they are ultimately discharged into the vena portarum.

The pancreas is of a dull, white color, with a tinge of red. Its weight is from three to four ounces. Its breadth at the body and splenic extremity is sixteen lines, at the neck twelve lines, at the head two inches and three lines. Its thickness at the body, neck and splenic extremity is four lines; at the head eight lines.

It appears to consist of small bodies of a granulated form, which are so arranged as to compose small masses or lobes, united to each other by cellular membrane. Each of these granulated bodies receives one or more arterial twigs, and from it proceeds not only a vein but a small excretory duct, which, uniting with similar ducts, form the adjoining granula or acini, forms a larger duct in each lobe or mass. These open into the great duct of the gland, which proceeds through it lengthwise, from the left extremity in which it commences to the right. This duct is situated in the body of the gland, which must be dissected to bring it into view. It is thin and transparent, and rather larger in diameter than a crow's quill. In its progress towards the right extremity of the gland it gradually enlarges, and commonly receives a branch from the part called the head or lesser pancreas. It most commonly unites with the biliary duct or sinus before it opens into the duodenum. Sometimes these ducts open separately, but very near to each other. They penetrate the coat of the duodenum rather obliquely, and between four and five inches from the pylorus.

The pancreas has an irregular surface destitute of a peritoneal coat, but it is invested by a cellular membrane which also connects its different lobes to each other. The head or lesser pancreas adheres to the duodenum, and when it is enlarged by disease, the passage of the aliment through that portion of intestine is much impeded and sometimes completely obstructed.

The use of the pancreatic juice is to induce the peristaltic motion of the bowels and in carrying forward the aliment from the duodenum into the small intestines in due time.

OF THE SPLEEN.

The spleen is a viscus of considerable size, situated in the left hypochondriac region beneath the diaphragm and the eighth rib, and to the left of the stomach, which it is immediately connected with. Its medium length is about four and one-half inches, and its width three or four inches, and its thickness two and one-half inches, and it weighs about eight ounces. It is of a soft texture, somewhat spongy to the feel, and easily torn. In a very recent subject it is of a grayish blue color, which in a few hours changes to a purple, so that it resembles a mass of clotted blood. At its inner surface, or that which faces the kidneys, a fissure exists, by which the vessels and nerves enter and issue from the organ.

The spleen is invested by the peritoneum, one process of which is often extended from the diaphragm above and behind it, in the form of a ligament. Another process of the same

membrane is extended to it from the great extremity of the stomach. The peritoneum is continued from the spleen in the form of omentum (*gastro splenic.*) Within these peritoneal coverings is the proper coat of the spleen, which is so closely connected to it as to appear to be one membrane. They are, however, very distinct at the great fissure, but the external coat is very thin. The proper coat of the spleen is not very thick; it is dense and firm and somewhat elastic, but not much so. It is partly transparent.

The spleen has a large artery, which is one of three great branches of the cœliac. This vessel runs in an undulating manner in a groove in the upper edge of the pancreas, and in this course sends off many small branches to supply the gland. The splenic artery, before it arrives at this spleen, divides into five or six branches, which are also undulating in their course, and penetrate into the viscus at the above-mentioned fissure. These branches ramify minutely to every part of the viscus.

From these branches, or from the main trunk before it ramifies, three or four small branches proceed to the left extremity of the stomach. They are called *vasa brevea* or arterial breves.

The splenic artery is very large in proportion to the size of the viscus to which it is sent, and the vein is unusually large in proportion to the artery, by reason of the excretory ducts of the organ having anastomosed with the veins before they emanate from it.

The splenic vein in its course receives into it the venous blood that emanates from the stomach and pancreas, and forms one of the principal branches of the vena portarum.

The nerves of the spleen are derived from the solar plexus. They form a plexus around the vessels and accompany them through the viscus. The absorbent vessels of the spleen are very numerous. Those of the deep-seated parts unite to the superficial at the fissure where the blood vessels enter. They terminate in the thoracic duct, after passing through several lymphatic glands.

The physiological work assigned to this organ has been a subject of interesting inquiry from the earliest to the present time. It has received the closest anatomical dissection from many eminent anatomists and physiologists, in order to ascertain by its structure the functional work assigned to it, yet without being able to arrive at any definite conclusion in regard to its offices. The confounding argument that has been successfully hurled against every suggestion of its use is that which is derived from the fact that man and animals have been able to live after it had been wholly extirpated. Yet, as all are willing to admit that everything that God has made in the ani-

mal economy subserves important ends, and that he forms nothing in vain, some protecting care for the system is assigned to this organ, and to me it seems to lend its aid in various ways.

First, more arterial blood is assigned to its use than any other organ, is manifest by the undue size of the arteries assigned it; and as the emanating veins are unduly large and out of proportion with even these large arteries, evinces an argument in favor of the idea that a large quantity of element is elaborated by this gland, and that its excretory ducts unite with the emanating veins before they leave the viscus. If this be so, may not this recrementitial element subserve the end of more perfectly finishing the chyle in arming it with greater chemical affinities than it would possess were this organ extirpated or disqualified to perform its functional work in disease?

Secondly, one of the fundamental laws of chemistry is that at every chemical change matter undergoes, caloric and electricity are evolved. As a large quantity of arterial blood is sent to this organ for conversion, an unusual amount of caloric and electricity must be evolved by this organ; and, as it lies in contact with the stomach, may not this caloric aid the stomach in digestion and protect it from being chilled below the standard of assimilation when large drafts of cold water are taken. Again, the high temperature of the venous blood sent from the spleen may serve to keep up the temperature in the portal circulation to a proper degree for its functional work of secreting the bile, and the electricity evolved return to the great nervous centres and contribute to the capital stock of the cineritious element, or ganglionic nervous capital.

Thirdly, the spleen seems to attract much attention, and perhaps deserves high consideration, for the aid it renders in resuscitating the system from the state of chill in ague and fever. In this disease prostration of the nervous system is the first appreciable derangement. When this enervation is carried to the extent that the ganglionic nerves cannot render the organs of the digestive apparatus sufficient aid to perfect the chyle, assimilation is imperfectly effected, until a collapse ensues, and a chill sets in.

The spleen being the most sensitive organ in the group, that derive their nerves from the solar plexus, is thrown into a state of tormina by the congested state, during the arterial plethora, induced by the chill. This pain commands a nervous rally that has to pass through the solar plexus to reach the spleen. This nervous rally resuscitates the power of the solar plexus, and enables it to contribute renewed energy of action to all of the organs of the digestive apparatus, and thereby induces a re-

action from the cold stage to a febrile state ; thereby the system is saved from perishing in the chill. In cases of severe congestive chills and fever, wherein the patient dies in the third or fourth chill, the spleen is capable of effecting a sufficient rally at first, but by the intensity of the congestion it becomes more and more disenabled to command the due amount of sympathy to induce an efficient nervous influx to effect a reaction, and the chill continues until the lamp of life is extinguished. Each of the congested organs contribute to induce this nervous rally in proportion to their sensitiveness, but lack ability to play the most conspicuous part. Therefore it is very doubtful whether the system when deprived of this organ could survive a congestive chill.

Fourthly, this organ also serves as a sensitive media to check the young and indiscreet mind from persisting in long continued exhausting muscular effort, as in running or in hurried labor. By this undue effort the spleen becomes unendurably painful, thereby they are compelled to rest until the nervous system shall recuperate sufficient to relieve the pain. It thereby admonishes such minds to use moderate effort in muscular action. Were the system deprived of this monitor, fatal congestion of the nervous centers might result from such indiscreet exhaustions of the nervous system.

OF THE ŒSOPHAGUS.

The œsophagus is a flexible elastic tube which when distended is nearly cylindrical. It consists of a muscular coat externally, and an internal tunic, evidently continued from that of the pharynx. Those two coats are connected by a cellular substance called the *nervous coat*, which receives the nerves and blood vessels before they ramify the other membranes. This coat is loose and allows the two membranes to move considerably on each other. There is no sphincter at the junction of the œsophagus with the stomach, as has been asserted by some anatomists. The mucous membrane of this tube, like that of the rectum (and unlike any other portion of the alimentary canal), is united by a very loose cellular tissue to the inner face of the circular stratum of fibers, so that it may be withdrawn as a cylindrical tube from the muscular sheath in which it is contained. The blood vessels of the œsophagus come from the aorta and those which are in the vicinity.

The nerves are derived from the eighth pair. The lymphatic vessels are very abundant. In the neck the œsophagus inclines rather to the left of the middle line. It lies behind the trachea, and as it enters the chest and proceeds down the back between the lumina of the mediastinum, it preserves the same course to the fourth dorsal vertebra, when it assumes the mid-

dle portion and proceeds downwards, with the aorta to its left and the pericardium before it. At about the ninth dorsal vertebra it inclines again rather to the left and somewhat forward, to arrive at the aperture in the diaphragm through which it passes. Through this course it is connected by cellular membranes to the contiguous parts ; and this investiture of the cellular membrane has been called its *external coat.*

OF THE STOMACH.

This organ is a large sac that receives the aliment from the œsophagus. Its left or largest part lies in the left hypochondrium and extends to the right a little past the sternum in the epigastric region. The orifice which connects it with the œsophagus is called the *cardiac orifice,* and at its right or lower extremity,where it empties into the duodenum, is denominated its *pyloric orifice.* It lies directly in contact with the left lobe of the liver. As the œsophagus terminates in the stomach immediately after it passes through the diaphragm, to which it is finally united, it is evident that the stomach must be thus fixed at that point ; but it is more movable at its other orifices, for the extremity of the duodenum into which it is continued is movable.

The stomach is connected with the concave surface of the liver by the reflection or continuation of the peritoneum, which forms the lesser omentum. This membrane, after extending over each surface of the stomach, continues from its great curve in the form of the large omentum, and connects it to different parts, especially to the colon. There are likewise folds of the peritoneum, as it passes from the diaphragm and from the spleen to the stomach, which appear like ligaments.

The stomach is composed of four distinct lamina. There is an external covering continued from the peritoneum. Within this and connected to it by delicate cellular substance, is a coat or stratum of muscular fibres, contiguous to these fasciæ internally is a layer of dense cellular substance called a nervous coat, and lastly is the internal *villous coat.* The stomach is closely invested by the peritoneum on every part of its surface excepting two strips, one at the lesser and the other at the greater curvature. These strips or uncovered places are formed by the separation of the lamina above mentioned, which includes all triangular space bounded by the stomach and these two lamina. In these triangular spaces at each curvature of the stomach, are situated the blood vessels which run along the stomach in those directions, and also the glands which belong to the absorbent vessels of this viscus. The peculiar arrangement of the lamina at this place is particularly calculated to permit the dilatation of the stomach. When it is

dilated, the lamina are in close contact with the surface, and the blood vessels, being in the angle formed by the adhesion of the two lamina to each other, are so likewise; when it contracts the blood vessels appear to recede from it, and the lamina are then applied to each other.

The internal coat of the stomach is generally found covered or spread over with mucous, which is exhaled from its internal or mucous membrane in its normal condition.

The pylorus separates the stomach from the duodenum. Circular muscular fibres surround the pylorus, forming a depression, by which means this orifice is closed.

The arteries of the stomach are derived from the cœliac—the first branch which the aorta sends off to the abdomen. This great artery, immediately after it leaves the aorta, is divided into three branches, which are distributed to the stomach, the liver and the spleen, and are called the *superior coronary* or *gastric*, the *hepatic* and the *splenic*. Besides the first mentioned branch, which is distributed principally in the neighborhood of the cardia and the lesser curvature, the stomach receives a considerable branch from the hepatic, which passes along the right portion of its great curvature, and has been called the *right gastro epiploic*, and another from the spleen, which passes along the left portion of the great curvature, called the *left gastro epiploic*. In addition to these branches, the splenic artery, before it enters the spleen sends off several small arteries to the great extremity of the stomach, which are called *vasa brevia*. These vasa brevia generally arise from the main trunk of the splenic artery, but sometimes from the branches.

The veins which receive the blood from these arteries have similar names, and pursue corresponding courses backwards; but they terminate in the vena portarum.

The absorbent vessels of the stomach are very numerous and large. They pass to the glands,which are on the two curvatures, and from thence to the thoracic duct.

The nerves of the stomach are derived from the two great branches of the par vagum, which accompany the œsophagus and are mostly spent upon this organ, and from branches from several plexuses, which are derived from the ganglionic or intercostal nerves. The par vagum nerves form a plexus around the cardiac orifice, and are distributed, to the left on the anterior, and the right on the posterior face of the stomach. These nerves can be traced into the muscular coat of the stomach, and some of them as far as the duodenum. The section of these nerves paralyzes the muscular coat of the stomach.

Chymification of the food has been supposed to be effected by a solvent called the *gastric juice*, an imaginary element that has had many supporters, yet none of whom have as yet been

able to demonstrate the truthfulness of this supposition. Yet many favorable opportunities have obtained for satisfactory observation, as in the case of an opening in the stomach, when it could be duly inspected, which is cited by Dr. Belmont.

OF THE INTESTINES.

The intestines form a continued canal from the pylorus to the anus, which is generally six times as long as the subject to which they belong. Although the different parts of this tube appear somewhat different from each other, they agree in their general structure. The coats or laminæ of which they are composed are much like those of the stomach, but the peritoneum, which forms their external coat, does not approach them in the same manner, nor is it continued in the form of omentum from the whole tube, there being only a certain portion of the intestine, viz: the colon, from which such a process of peritoneum is continued. The second or muscular coat, like that of the stomach, consists of two strata, the exterior of which is composed of longitudinal fibres which adhere to the external coat, and do not appear very strong. The other stratum, consisting of circular or transverse fibres, is stronger, as the fibres are more numerous. It is observable that they adhere to the longitudinal fibres, and they seldom, if ever, form complete circles.

The cellular substance beneath the muscular fibres resembles the nervous coat of the stomach in its firmness and density. It is likewise so arranged as to form many circular ridges on its internal surface, which support, to a certain degree, the permanent circular plaits of the internal coat, called *valvulæ conniventes*.

The inner surface of the internal coat has been commonly compared to velvet, and the coat is therefore called *villous*. On this surface, between the villi, there are many orifices of mucous follicles and of exhaling vessels. Exterior to the villous coat many very small glandular bodies are sometimes formed, which are called after their discoverers the glands of *Brunner* and *Peyer*.

The internal coat of the upper portion of the intestinal tube is arranged so as to form a great number of transverse or circular folds or plaits, called *valvulæ conniventes*, which do not extend around the intestine, but are segments of circles. They are so near each other that their internal edges, which are very movable, may be laid upon the folds next to them, like tiles or shingles. It is evident that this arrangement of the internal coat must add greatly to its length. This coat is externally vascular; in the dead subject it can be uniformly colored by a successful injection. The minute structure of this membrane

has been the subject of very diligent inquiry, as an immense number of exhaling and absorbent vessels open upon it, and all agree that the orifices which communicate with the lacteals are in the villi, and that these villi also contain very fine ramifications of blood vessels. They have also agreed that the intestines in the intervals between these villi seem occupied with the orifices of ducts or exhalent vessels.

DIVISION OF THE INTESTINES.

Although there is a considerable degree of uniformity in the structure of the intestinal canal, different parts of it are very distinguished from each other by their external appearance, by their size, their investments, and their position. The first division is into two great portions, which are very different from each other in their diameter and length, as well as their situation, the first portion being much smaller in diameter, and nearly four times the length of the other.

These portions are therefore known as the *great* and *small intestines*, and the line of separation between them is very strongly marked, for they do not gradually change into each other, but the alteration in size and in exterior appearance is very abrupt, and their communication is not perfectly direct. A considerable portion of the *great intestine* is immovably fixed in the abdomen, while a large part of the *small intestine* is very movable.

Each of these great portions of the intestinal tube is subdivided into three parts:

Thus in the *small intestine* there is a piece at the commencement called *duodenum*, a great part of which has no coat from the peritoneum, and is immovably fixed in one situation, while all the remainder of the small intestine has a uniform covering from the peritoneum, and is very movable. This last piece, notwithstanding its exterior uniformity, is considered as forming two parts. The uppermost two-fifths form one part, which is called *jejunum*, and the remainder of the small intestine is called *ileum*.

The great intestine commences in the lower part of the right side of the abdomen, and after proceeding up that side, crosses over to the left, along which it descends to the lower part again, when, by a peculiar flexure, it proceeds to the centre of of the posterior margin of the pelvis, from which it passes down to the anus. A short portion of this intestine, which is below its junction with the ileum, is called *cæcum*. The part which proceeds from this around the abdomen is called *colon*, and the portion which is in the pelvis is called *rectum*.

OF THE SMALL INTESTINES.

Previous to the description of the small intestines, it is

necessary to observe that the mesocolon, or process of the peritoneum connected to the transverse portion of the colon, forms a kind of immovable and incomplete septum which divides the abdomen into an upper and lower apartment. Above this septum are the stomach, the commencement of the duodenum, the liver and the spleen; below it that portion of the small intestine which is called *jejunum* and *ileum* makes its appearance. The portion of the intestine which passes from the stomach to the jejunum is called *duodenum*, which is so much involved by the mesocolon that the greatest part of it cannot be seen without dissecting the mesocolon from its connection with the back of the abdomen. For the duodenum proceeds backwards from the pylorus, and down behind the peritoneum, entering a vacant space between the lamina of the mesocolon. It proceeds for some distance in this space, and then emerges on the lower side of the mesocolon. There the duodenum terminates, and the small intestine then is invested by the peritoneum in such a manner as to form the mesentery, which continues with it through its whole course to the great intestine. This portion of the intestine, though very uniform in its exterior appearance, as has been observed before, is divided into *jejunum* and *ileum*, the jejunum being the upper portion which begins at the mesocolon, and the ileum the lower portion which opens into the great intestine.

OF THE DUODENUM.

The length of this intestine is equal to the breadth of twelve fingers, hence its name. It is very different from the rest of the small intestines, not only as respects its position and lack of peritoneal investment, but on account of its connection with the liver and pancreas by means of their excretory ducts which open into it. From this with these glands, all the peculiarities of its position are to be deduced.

When the stomach is in its natural situation, the pylorus is at some distance from the back of the abdomen. The duodenum proceeds backwards from this point, and passes near the neck of the gall bladder, being here connected with the small omentum. It then curves downwards, and descends before the right kidney, sometimes at the lower part of it; then it curves again and passes over to the left. After it has arrived at the left side of the spine at the second or third lumbar vertebra, it projects forwards and downwards to form the jejunum. The only portion of the intestine which is movable is that which is in sight, as it proceeds immediately from the pylorus, being about an inch and a half or two inches in length.

The remainder is connected to the back of the abdomen, and lies between the two lamina of the mesocolon. In its

progress it passes before the aorta and vena cava, but the principal branch of the vena portarum is before it. The duodenum is larger in diameter than any other part of the small intestines, and has a stronger muscular coat. Its general situation admits of great dilatation, and has been called the second stomach. Its internal coat is strictly villous, in the anatomical sense of the word, and its folds, the valvulæ conniventes, begin at a small distance from the pylorus. The orifices of many mucous ducts are to be seen on its surface. It is supposed that some of these are the terminations of ducts from the glands of Brunner, which sometimes appear in the villous coat, or very close to it exteriorly, being small, flat bodies, with a depression in the centre, and a foramen in the depression. They are sometimes very numerous at the upper extremity of this intestine, and diminish gradually towards the other extremity.

The biliary and pancreatic ducts open posteriorly into the duodenum, rather above the middle of it. The orifice of these ducts is generally surrounded by a small tubercle, which is oblong, somewhat rounded at one extremity and pointed at the other. Sometimes this orifice is in a plait, like one of the valvulæ conniventes. Most commonly the two ducts unite before they perforate the coat, so as to form but one orifice, and sometimes they open separately, but always very near to each other. Absorbent vessels, which contain chyle, are found in the duodenum.

THE JEJUNUM AND ILEUM

Are situated in the abdomen very differently from the duodenum. When the cavity is opened and the omentum raised, they are in full view, and every portion of them except the two extremities and the parts near them can readily be moved. This freedom of motion is owing to the manner in which they are invested by the peritoneum, or, in the technical language of anatomy, to the length of their mesentery. They agree in their structure with the general description of the small intestines, but their muscular coat is rather weaker than that of the duodenum. The valvulæ conniventes are very numerous and large in the upper portion of the tube, or jejunum, and gradually diminish in number until they finally disappear in the lower part of the ileum. The villous coat is in perfection in the jejunum, the villi being more conspicuous there than in any other part of the intestinal tube.

There are frequently found exterior to this coat, but immediately connected with it, many small glandular bodies of a roundish form, which are often clustered together at that part of the intestine which corresponds with the intestine of the

lamina of the mesentery. They are called *Peyer's Glands*, after the anatomist who first discovered them, and are supposed, like the glands of Brunner, to secrete mucus. If a portion of the jejunum be inverted and moderately distended with air, these bodies appear very distinctly in it, dispersed at small distances from each other. In the ileum they appear in small clusters, which often have the appearance of disease.

THE MESENTERY

is a portion of the peritoneum which is formed in the manner of a ruffle, and of course consists of two lamina. The lamina proceed from the back part of the abdomen, and are so near of each other that they compose one substantial process, having cellular and adipose substance, blood vessels and nerves, with absorbent or lacteal vessels and their glands between them.

The form of this process, when it is separated from the back and the intestines or detached from it, is somewhat semicircular. That portion of its margin or edge which corresponds to the diameter of the semicircle is attached to the back of the abdomen, and is called the root of the mesentery. The intestine is connected to its circular edge. The edge connected with the back of the abdomen is commonly five or six inches in length. The semicircular edge, instead of extending fifteen or eighteen inches in length, is attached to a portion of intestine sometimes twenty-four feet in length.

The mesentery, on account of this great difference between its diameter and circumference, has been compared to the ruffle of a shirt-sleeve.

The root of the mesentery commences with the jejunum, on the lower side of the mesocolon, at the left of the spine, and extends downwards near to the right iliac region, crossing the spine obliquely. When it is examined in its natural situation, the peritoneum is found continued from the back of the abdomen to the intestine. It then surrounds the intestine, and continues from it to the back of the abdomen again.

There must, therefore, be two lamina of the peritoneum in the mesentery, and there must be a small portion of intestine answering to the interstice between these lamina which is not covered by the peritoneum. The blood vessels and absorbents, or lacteals, that receive the chyle from the intestine, pass most commodiously to the intestines between these lamina; for they are connected with large trunks that lie on or near the spine, and the root of the mesentery commences there.

The glands connected with the lacteals or absorbents are very conspicuous in the mesentery, and are called *mesenteric glands*. They are of different size, from more than half an inch

to one or two lines in diameter. They are very numerous, and scattered irregularly, but are seldom observed very near to the intestine. They are often enlarged in consequence of disease. The nerves of the small intestines, which are derived principally from the superior mesenteric plexus, are also to be found here.

The adipose, or fat, between the lamina of the mesentery, is very often in large quantity, but varies in proportion to the quantity of adeps in the subject.

OF THE GREAT INTESTINES.

The cæcum and colon are very different from the small intestines in many respects. They are much larger in diameter. Their external surface is marked by these longitudinal bands of light color, which extend the greater part of their length, and are placed nearly at equal distance from each other. The spaces between these bands are marked by transverse indentations, which pass from one band to the other at short but unequal distances. At these indentations, the coats of the intestine are passed inward, as if a fine thread had been drawn around it externally, while the spaces between them are full and tumid, and on this account are called *cells*.

The great intestine, with these appearances, begins, as has been already observed, in the right iliac region, by a rounded end which rests on the fossa or concave surface formed by the costa of the ileum. From this it continues upwards, in the right lumbar region, anterior to the kidney, called *ascending colon* until it arrives near the liver, when it forms a curve called *the arch of the colon*, and passes directly across the abdomen to the left side. In this course it approaches so near to the under side of the liver, that it is often in contact with it, and with the gall bladder, which after death tinges it with a yellow color. On the left side it passes down the lumbar region, forming the *descending colon*, before the kidney, to the left iliac region, where it is curved so as to form the Roman letter S, inverted, forming the *sigmoid flexure*. This curve generally carries it to the right side of the spine, and then brings it back to the center of the sacrum. There the intestine changes its course, and passes into the pelvis, continues downward, in contact with the sacrum and coccyx, and partaking of the curvature of those bones, until it terminates at the anus, where it is connected with the sphincter levator ani muscle.

About two inches from the commencement of the great intestine, the ileum opens into it laterally, and all that portion which is between its commencement and the insertion of the ileum is termed *Cæcum*, or the blind intestine. That part of the great tube which is included in its course from the insertion of the ileum to the posterior brim of the pelvis is called *Colon*, and

that part which is contained in the pelvis is termed *Rectum.*

The *Cæcum* is nearly as wide as it is long ; it is fixed in the right iliac fossa by the peritoneum, which invests it so that the great body of the intestine projects from the surface of the fossa covered by the peritoneum, but a portion is in close contact with the surface, and connected to it by cellular membrane.

At the round end of the *Cæcum,* situated anteriorly and internally, is a small process resembling an earth worm in form and size: this is called *Appendicula Vermiformis.* It is hollow, and communicates with the cavity of the cæcum, but has its other cavity closed up. Its length is from two to four inches.

After the stomach, the cæcum may be considered the largest portion of the intestinal canal. In the fœtus its diameter appears to be nearly the same as that of the adjoining colon, and its subsequent increase in diameter over that of the colon, appears to be mainly due to the stagnation of the fœcal matter, in consequence of the dependent position of this part of the large intestines, and the transverse direction by which the contents of the ileum are discharged into it.

Retention of fœcal matter often takes place in it, in cases of constipation, which have frequently led to inflammation of this bowel, and to swelling and abscess in the iliac fossa.

THE KIDNEYS OR RENAL ORGANS.

The kidneys are two glandular bodies, situated in the lumbar regions, on the sides of the vertebral column, opposite the two last dorsal and two first lumbar vertebræ. The right kidney is placed at the under and back part of the large lobe of the liver, and is usually a little lower than the left kidney. The latter is placed under the back part of the spleen, and behind the left portions of the stomach, pancreas and colon.

The kidney is four or five inches in length, and in shape resembles the kidney bean. It is enveloped in a mass of fat. This adipose tunic is extended likewise to the renal vessels, and is supposed to defend them from the pressure of the surrounding viscera.

The right kidney is in contact with the liver, the left with the spleen, and both with the muscles on which they are placed, and connected to the suprarenal glands and colon by a cellular tissue. The peritoneum is reflected from the liver and spleen to the kidneys.

ORGANIZATION OF THE KIDNEYS.

The surface of the kidney is usually smooth and uniform, though sometimes it is irregular, in consequence of the lobes which originally form it not being so completely incorporated. Each kidney receives from the aorta an artery of considerable diameter, and returns its blood by a large vein into the vena

cava. A very distinct nervous plexus surrounds these two vessels, and the lymphatics are very easily traced.

The kidney appears to be formed of two distinct substances —an external *cortical*, and an internal *tubular* substance.

The *cortical substance* of the kidneys forms the external layer of these organs, and internally it is prolonged into them in the form of septa, between which we find the conical fasciculi of the tubular substance. When viewed with a microscope the cortical substance appears to be composed of solid granulations of a very small size, formed by the capillary extremities of the renal arteries and veins.

The *tubular substance* presents a number of fasciculi, surrounded on all sides, except at their summits, by the cortical substance. The base of each cone is directed towards the circumference of the kidney; and their summits, on the contrary, are directed towards the pelvis, or fissure of the kidney.

The color of this substance is a pale red. Its tissue is dense, and is formed of a multitude of very minute convergent canals, termed *tubuli uriniferi*, which derive their origin from the cortical substance, and, terminating in larger ducts at the summits of the cones, present so many papillæ, at the points of which the urine oozes out. The number of papillæ is twelve or fourteen. The orifices of the canals, called the ducts of *Bellini* of the tubular substance, are less numerous than the canals themselves, on which account it is to be presumed that several of these uriniferous tubes unite before they terminate.

THE CALICES PELVIS AND URETER.

The *calices*, or *infundibula*, are membranous tubes which embrace the papillæ, and which receive the urine from them.

The infundibula are commonly the same in number as the papillæ. The number, however, varies in different subjects, two or more papillæ sometimes opening into the same infundibulum.

The *pelvis* is a membranous sac formed by the union of the infundibula. It is contracted at the inferior part to be continued into the ureter.

The ureters descend in the loins obliquely inwards behind the peritoneum, and over the psoas and iliac muscles, and passing into the pelvis, terminate in the under, outer and back part of the bladder, by a narrow, oblique orifice.

The infundibula, pelvis and ureters appear to have the same organization, being composed of two membranes, namely, an *outer*, thick, white, opaque membrane, which may be considered as a prolongation of the fibrous capsule of the kidney; and an *inner*, mucous, transparent membrane, which is extended from the infundibula over the papillæ, and perhaps even introduced into the uriniferous tubes.

When the ureters open into the bladder, some few pale, muscular fibres may in general be found. These have been named the *muscles of the ureters* by SIR CHARLES BELL, who describes each as arising from the vesical extremity of the ureter, and thence descending obliquely forwards and inwards to be inserted by a tendon, common to its fellow, into the tubercle or uvula of the urethra. The use which he assigns to them is, to restrain the termination of the ureters, and preserve the obliquity of the passage of these tubes through the coats of the bladder when it is contracted; for, without this provision, he remarks, the urine would be sent retrograde into the ureters, instead of forward into the urethra.

THE BLADDER.

The *urinary bladder* is a muscular membranous reservoir, whose office is to retain for some time the urine, which is afterwards to be ejected from it. The bladder is situated in the pelvis at the bottom of the hypogastric region.

The superior part of the bladder is in contact with the inferior convolutions of the small intestines, and from its centre we observe a fibrous cord termed the *urachus*, which ascends between the linea alba and the peritoneum to the umbilicus, where it terminates in the abdominal aponeurosis.

The *inferior* part of the fundus of the bladder in the male is connected by cellular tissue to the vesiculæ seminalis, and the end of the vasa deferentia. That portion of the bladder which is between the vesiculæ rests upon the rectum. In the female the bladder is connected with the levator ani and the vagina.

The anterior part is situated behind the pubes, but when the organ is distended by urine, we find it in the hypogastric region. There is a fasciculus of fibrous membrane which attaches the inferior part of the bladder to the symphysis of the pubes, named the anterior ligament of the bladder.

The posterior part is entirely covered by the peritoneum, and is contiguous in the male to the rectum, and in the female to the uterus.

The *internal* surface of the bladder is formed by a mucous membrane, which, in its empty state, presents numerous irregular rugæ, but those disappear when the bladder is full. It is named the trigonal space of the bladder.

The neck of the bladder has a crescent-like form, the margin of which is very thick, and it embraces a small tubercle designated by the name of the *uvula vesicæ*.

THE SKIN OR DERMOID TISSUE.

The skin is composed of three very distinct layers: the *dermis*, the *rete mucosum*, and *epidermis* or *cuticle*.

The *dermis* is the inner and thickest layer of the skin. It is formed of fibres interwoven in an inextricable manner, and is so plentifully supplied with blood vessels and nerves that the smallest puncture cannot be made in any part of it without inducing pain and a discharge of blood. It is the part of which leather is made.

The outer part is very compact, the inner more loose, and it gradually degenerates into the common cellular tissue.

Blood vessels twine in this subcutaneous cellular tissue, and project an infinitude of small branches which penetrate into the remotest areola of the dermis, unite in a variety of ways, cross the external surface, and finally give rise to that capillary net which I shall describe when speaking of the rete mucosum.

The nerves are distributed with and accompany the arteries to their termina. There is a subcutaneous stratum of nerves from which pass all the filaments that penetrate the dermis.

THE RETE MUCOSUM.

This tissue lies immediately exterior to the dermis and interior to the epidermis. In different subjects it has a different hue forming the complexion.

The rete mucosum may be conceived of as containing the capillary secretory apparatus of the cutaneous organ, interposed between the dermis and the epidermis. According to GAULTIER, it is composed of four distinct layers. The first is formed of blood vessels arranged like granulations on the surface of the dermis. The second is whitish and applied upon the former. There are numerous prolongations of this layer which penetrate into the substance of the fourth layer, comprising the exhalents. The third layer is composed of minute convex bodies, containing the coloring matter of the skin. The fourth layer is white, of extreme tenuity, perforated by the hairs, and adheres to the epidermis.

THE EPIDERMIS.

The epidermis or cuticle is the most superficial layer, which is separated from the dermis by the rete mucosum. It is thin and transparent and formed of numerous scales. The inner surface is very firmly attached to the exterior membıane of the rete mucosum, and to which it still adheres when a blister is formed.

A great number of sebaceous follicles are seated under the skin, and open by small ducts on its surface. These follicles or glands secrete an oily fluid, which serves to lubricate the skin.

The epidermis is devoid of nerves or blood vessels, and is being constantly recuperated from its adherent membrane.

CAPILLARY CIRCULATION OF THE BLOOD.

There are three transit capillary circulatory passages for the blood in the human system—the pulmonary, the systemic, and the biliary; each having the formula for its transit through the capillaries corresponding with the physiological work assigned to it: that in the lungs for constructing and arming blood globules for nutrition; the systemic capillaries for nutrition; and in the biliary for secreting the bile. Depuration is an object provided for in each of these transfers, also thermal elevation and the generating of electricity. In order to comprehend the vital chemistry instituted in these transfers, it is important to first refer to the conspicuous part assigned to the functional nerves that preside over the organic chemistry of these departments. The functional nerves of the lungs are sent out with the pulmonary arteries, and ramify and terminate with them at the discs of the air cells. They furnish the specific element for exciting the combustion and combination of the hæmatine of the blood globules which perfect them for detonation in the systemic nutritive transits, and in the combustion of each inspiration of air a fresh supply of caloric and systemic electricity is generated, and carbonic acid depurated. The means by which the functional nerves of each organ obtain their specific radical basical element for combining with elements in the circulating blood is provided for in the structure of their ganglia.

Beginning the round of the circulating blood in the right ventricle, we first find the venous blood being forced into the pulmonary artery, by the contracting force of the right ventricle of the heart. Secondly, we find the pulmonary artery ramifying into capillaries that terminate upon the discs of the air cells.

We find at all these transfer centres functional nerves armed with the element peculiar to govern the chemical production divinely intended for the work and needs of each department. In the work of hæmatizing the coats of the globules at the air cells, we find the electric atoms governing the chemical formula for the composition of the hæmatine. In this chemical work, instituted in these air cells, we find caloric and electricity evolved; one used for raising the thermal temperature of the system, and the other contributing to the structure of the systemic fibre. The precise formula of the chemical evolutions assigned to each of the transits we may never fully comprehend, nor the subtility of the divine art of securing the element products for the perpetuity of the human form. Yet, from our knowledge of chemical law, and the elements brought into juxtaposition, and the use of the products made in sustaining

the perpetuity of the system through this round of the circulating blood, we may gain from a close observation of the principles involved in these laws of health a better knowledge of the causes that make up the catalogue of diseases that afflict mankind. From a knowledge of the dependencies of health only are we enabled to derive correct conceptions of the pathology of disease.

NUTRITION—THE FUNCTION OF THE NUTRITIVE NERVES.

In looking through the many chemical elaboratories in the human system, we find in the different ganglia of the nerves the subdivided work of transforming molecules into specific designs to be dispensed by their nerves to compose the dissimilar parts of the system. We also find the digestive elaboratories engaged in refining and affinitizing aliment for chemical reception at the capillary points of nutrition. We likewise find a central circulatory propelling power, like a hydraulic engine, ever in motion propelling this aliment to all parts of the system, to keep constantly on hand the demanded aliment for the nutritive supply. In the construction of the ganglia, we find the most intricate provisions for the work of transforming electric molecules, by combining atoms in harmony with chemical ascending laws for bases, to govern the various compositions of the dissimilar parts: like the intelligent chemist who obtains, through a certain routine of formulas, the direct affinities required for his artistic design that which could not be obtained in a more direct method.

NUTRITION.

Beginning with the principle that at every chemical interchange of molecular affinities that occurs between elements in what is called a chemical *evolution*, *caloric* and *electricity* are evolved with the new-born chemical product. To this source must all free caloric and electricity be referable. Among the many elements that enter into the composition of the animal economy, these two elements contribute the most indispensable aid to the functional work of nutrition. The store of elements divinely capitalized for sustaining the perpetuity of animal life are found in atmospheric air, vegetable and animal food, and pure water. In the lungs are found all the elaboratorial devices for inhaling atmospheric air, and properly appropriating its elements to use. So also in the digestive apparatus for properly elaborating the aliment received from time to time into chyle for keeping up a supply of nutritious circulating blood.

The elaboratorial work of transforming aliment into arterial blood is completed in its transit through the lungs. When

thus completed the arterial blood becomes a homogeneous aliment that is constantly being sent forward through the ramifying arteries by the propelling force of the heart to every part of the system, to furnish its share of nutriment to contribute to the recuperative support of every systemic fibre.

The systemic nutritive nervous system also branches into capillaries, one of which entwines in the coats of each of the capillary arteries, and terminate together at the point of nutrition.

The electrical neurine dispensed to combine with the arterial blood in support of the fibre is not homogeneous throughout the system, but is a specific radical element elaborated in the ganglion of each nerve, suited to direct the form of the fibre over which each presides. By this provisional means all the dissimilarly composed fibres are constructed.

In the systemic nutritive circulatory capillary transfer we find, directly at the point of transfer, all the vessels unite with the nerve and fibre to form a kind of minute ganglion in which the chemical interchange occurs. In the process the blood globules are broken down, and their nutriment combines with the basic nerve element to renew the vitality of the fibre which is being constantly drawn upon for locomotive activity and systemic elaboratorial support. The residuum with the carbonic acid generated is reduced to a thinner fluid that escapes through the transit into the vein.

When the nerves fail to support this nutritive work the transfer is impeded, and the capillary artery becomes distended by the continual force of the heart, inducing congestion. A congested capillary artery encroaches upon the nervous coil that entwines around it. This encroachment upon these sensitive nerves of nutrition induces pain, which is designed in the systemic economy to call a sympathetic rallying aid to resuscitate the delinquent nerve, which, when effected within a proper time, terminates the congestion by renewed nutritive activity. This successful work is the routine by which "inflammation is terminated by resolution."

Nutrition may become deficient from one or both of these sources of recuperative supply. The blood from several causes may be rendered too depraved to permit the nutritive chemical evolution; or it may only feebly support it. The first will induce congestion and inflammation, the latter chronic debility and systemic decline. One of the sources of impure blood is the inhalation of impure air, which is called malaria, of which there are two kinds: one is derived from vegetable decomposition in the form of hydrated carbonic acid gas, which we have great reason to believe to be the source of epidemical congestive fevers. The other order of malaria is

derived from carbonic acid gas exhaled from the lungs in overcrowded and unventilated rooms, as in prisons, hospitals and on board ship. This human malaria is claimed to be the source of the contagious typhus fever. There is still another very frequent cause of rendering the blood too poor for nutrition. It is an overflow of urine into the circulation, which occurs whenever the renal excretory ducts become obstructed by albumen or inflammatory congestion of the epithelial membranes of these columnar ducts. In this case the secreted urine overflows and is carried into the circulation in the renal emulgent vein, precisely after the manner of the overflowing bile, which is carried into the circulation in the emulgent portal veins. This renal obstruction and overflow of their secretion is always present in every case of intermittent fever, as an exciting cause of each exacerbation.

The carbonic acid gas when inhaled into the lungs disappoints the system of the healthy molecular formula of elements present in the air cells for forming perfect hæmatine and for depurating the usual quantity of carbonic acid from the blood, each of which are disqualifying conditions of the blood for healthy nutrition. In such deficient chemical interchange in these air cells there must be a deficient quantity of caloric generated, and an imperfect quality of nerve electricity result, to lower the standard of the radical electrical elements furnished by the nutritive nerves to combine with the blood in the work of nutrition. There is a line of minimum quantity of this gas in the atmosphere that the system can endure without much debility, and there is a maximum that will prevent combustion at the air cells in respiration that will immediately extinguish life. The dense accummulation of this gas in wells in some places is an example.

The evolutionary chemical fires instituted in each of the circulatory transits officiate in the culmination of the primates for vitality, and in the combustion of adventitious elements detrimental to the purity of the blood.

There is a minimum of possibility to sustain life in these departments under these embarrasments, and a maximum ability to maintain vigorous health midst favorable conditions, such as pure air, pure water, wholesome diet, suitable clothing and moderate exercise. While all the organs of the system are in a state of integrity to perform their functional work, the systemic powers will be very slow to yield to epidemical or contagious diseases. Except the system become first enervated by a redundance of carbonic acid in the atmosphere, the chemical fires set in the capillary terminal crucibles in the pulmonary and systemic transits would fuse any molecules of typhus contagion that might find their way into the system.

Typhus icterodes, or *yellow fever*, is dependent upon this malarial enervation of the systems of the people where it exists for its epidemical form. Further, it is disarmed of its contagion as soon as it passes out of the bounds of such malarial district. The proof in point is that as soon as the earth becomes sufficiently chilled to suspend further alluvial exhalation of this malarial gas, no more cases occur.

PERISTALTIC MOTION AND CHYLIFEROUS ABSORPTION.

The involuntary movement in the small intestines by which chyme is carried forward is called *peristaltic motion*. Joining to the little valvulæ conniventes of the small intestines are arrangements of muscular fibres longitudinal and transverse, the longitudinal most internal. At the approach of the fluid, contraction is induced. The object of this arrangement will be apparent when their uses are explained.

This mucous membrane has a spongy villous coat that connects with the chyliferous ducts. This spongy coat being saturated with chyme, the compressing force used in the peristaltic motion forces the chyme into the chyliferous ducts. By this contraction, as the motion advances, the excess of fluid not retained between the conniventes is moved forward to be forced into other chyliferous ducts. Continuous peristaltic waves are thus carrying forward these small measures of chyme, which are dealt out in small quantities in the labors of the pylorus, which is the passage gate between the stomach and the duodenum. At these cartilaginous rings called valvulæ conniventes, I find continuous breaks in the electric currents that are induced by the absence of linæ to make the connection between the afferent and efferent nerves connected with these valves to dispense the motor electricity to the muscles between the valves. Each group of muscular fibres that are dispensed between each successive valve are separate from the others, and have separate slips sent to them from the afferent and efferent motor trunks that preside over the peristaltic motion in the intestines. These motor nerves are sent out with the vital nerves from the superior mesenteric plexus, with the mesenteric artery to dispense to the peristaltic motion and vitality of these small intestines. By the fine structure of this spongy coat and the peristaltic compression upon it, the chyle is separated and forced into the chyliferous ducts.

In the large intestines absorption is carried on alone by the lymphatic process, where, as in the small intestines, the chyliferous and lymphatic obtain. After the chyle enters the chyliferous ducts, it is impelled forward into the vena cava by the expansive or diastolic force of the heart.

A question arises in regard to the office the mesenteric

glands subserve. The mesenteric glands are of two structures —the chyliferous and the lymphatic. In the passage of the chyle through the chyliferous glands, it undergoes a more thorough reduction to a fluid state and glandular culmination of properties suited for chyle to be forwarded into the circulation, while the rejected elements are returned to the intestinal canal through the exhalent vessels of this membrane. In this glandular elaboratory the chyle receives its first systemic affinity. They serve to prevent the chyle from being carried too rapidly forward by the diastolic force of the heart. A reflex waste of the chyle from its gravity might occur were it not for some such provisional prevention as these glands.

Direct attention is called to corresponding principles to explain the motions of the heart used in this article to account for the muscular contraction and relaxation used in peristaltic motion.

OFFICES OF THE VERTEBRAL AND GANGLIONIC NERVOUS SYSTEMS.

Centered in the brain and cerebro spinalis is the genius of the architectural design of the structural being. The cortical brain composes the architectural structure of the organs that constitute the entity of the mental faculties. The artistic work of the system proper is divided between thirty-two pairs of nutritive nerves that emanate from the spine, the functions of which are to dispense the precise radical basic element needed to compose from the arterial blood the order of fibre designed. In the ganglionic plexiform and nerves of sense are special arrangements for instituting the structure of the organs to harmonize with the functional labors assigned to them. These two ganglionic trunks form connections with every pair of vertebral nerves from the base of the cranium to the coccygis. It is evident that some of the organs derive from this connection their recuperative nervous element, and in case of spinal congestion at one point, all other connections are accessible to lend support to the vital organs while the congestion is subsiding. These two great nervous trunks officiate as nervous sinuses, and furnish the direct channel for a systemic nervous rallying nervous support to pass from one centre to another throughout the whole length of the spinal column. Some of the organs through these vertebral connections derive their nutritive supply from the posterior branches, while they derive their slips of functional nerves from the anterior motors. Some are arranged to officiate as motors as with the heart, diaphragm and peristaltic motion in the small intestines, and devised so as to be placed beyond the interference of the will. Other functional nerves are furnished with chemical elements to compose the hæmatine in the lungs, the

bile in the liver, and the urinary secretions in the renal organs. The muscular fibres are also supplied with two sets of nerves —the nutritive and functional voluntary motors. The eighth pair of nerves support nutrition in the lungs and the muscle of the heart, while the sympathetic support all the organs in the abdomen.

A SYSTEMIC NERVOUS RALLY.

In the entity of the living being all its complicated subdivisions are but parts of one universal whole, animated by its living soul that is in sympathy with all its parts, having states of unconscious repose, and conscious observation and muscular activity, having three systems of nerves—the sensitive nutritive, the voluntary motors, and the great sympathetic. As the voluntary muscular system is directly under the control of the will force, for dispensing graduating power for continuous force and precision of motion, so are the involuntary nutritive nerves under the dominion of sensation for augmentation of activity. When the air and blood are nominally pure, these nutritive nerves involuntarily furnish their quota of elements for nutrition, and keep pace with the rhythmic activity of the lungs and heart, and whether awake or asleep proceed alike unabated, normally the same. But when abnormal conditions come in to disturb this sympathetic rhythmic harmony, sensation is aroused to officiate in its providential care for the health and longevity of the system. Then are the alternate recuperative laws manifest by the phenomenal *symptoms* arising from the various deranged conditions of the system, which make up the catalogue of diseases. Whenever the fires of nutrition begin to burn so low as to cause a chill, arterial plethora begins to augment with the degree of suspended nutrition, and would thus proceed to certain death were it not for a provisional means of a systemic nervous rally instituted in the spleen, supra renal capsules, and systemic capillaries, for an increase of painful sensation that augments with the increase of the force of arterial plethora until the nutritive nerves are goaded to an increased activity adequate to supply a quantity of neurine to resume active nutrition with the impoverished blood, that caused the suspension of nutrition while the system was in its normally passive state.

The spleen is placed in a position to furnish protection to all the vital organs dependent upon the par vagum or the eighth pair of cerebral nerves for nutrition against fatal congestion during a chill by the quantity of caloric and electricity it generates, and the painful rallying force to maintain continued nutritive action in the lungs, heart, liver, stomach and pancreas, as well as that of its own organ—the spleen. It also

stimulates the sympathetic nervous system to keep up its usual support given to the functional nerves of these organs. The supra renal capsules fulfil a similar office to that of the spleen to save the kidneys and mesenteric vessels from a suspension of nutrition and fatal congestion, and furnishes a decided effort to overcome the renal obstruction that has been delinquent in their depurative work that contribute greatly to the cause of the chill. The spleen and the supra renal capsules are vascular glands that remain passive, except under arterial plethora, then they awake to fulfil these assigned offices of protecting care. They are vascular glands without excretory ducts; they receive arteries unduly large for nutrition alone, ramify minutely, and have unduly large emulgent veins; and as they are passive, except under this arterial plethora, we have evidence that the spleen furnishes primates to contribute to the perfection of the circulating blood, as a substitute for bile when the liver is obstructed. That they fuse in their combustion elements detrimental to nutrition, we have no doubt. The pain induced in the distended capillary arteries calls to the delinquent nerves a rallied nervous aid to furnish the quota of neurine needed to resume nutrition. In this effort, if successful, we find the mode by which inflammation is said to *terminate* by *resolution* in locally inflamed parts.

It is quite possible that the supra renal capsules, in their augmented action, furnish an element solvent for the concretions that obstruct the renal excretory ducts.

MUSCULAR MOTION.

The design of the muscles is for local and locomotive motion. Quite a similar method is used to control muscular effort, that pertains to the arrangement for nutrition. The brain is many times larger than the medulla spinalis. Nervous fibrils arise from small lobules in the anterior halves of the two lobes of the cerebrum. These fibres are gathered into the two anterior bundles of the right and left hemispheral divisions of the spinal cord, and constitute its motor portion. Those that arise in a similar way from the posterior halves of the cerebrum make up the two posterior bundles for the vito-sensitive nervous system. These fibrils are gathered into thirty-two pairs of lateral nerves. The motor, or anterior, and posterior send out pairs that unite and pass out of the vertebral canal in the same neurilemma, and continue together thus to their points of destination. These nerves divide and subdivide into as many divisions as there are fibres under their charge. The motors send a fibril to every muscular fibre in the system, while the vito-sensitive sends one to every

muscular and membranous fibre in the system not internal to the pleura and peritoneum. The motor nervous system dispenses a homogeneous element to all the muscles, while the vito-sensitive dispenses dissimilar elements to each order of structure.

The economical method used to insulate so great a number of nervous filaments by gathering them into bundles to save insulating material, space and gravity, is worthy of appreciative observation. The nerves are insulated by carrying with them as they emanate from the spinal cord processes of the piamater and arachnoid membranes for the two inner insulating coats. The third and outer coat appears to be preceded by the arachnoid to supply the place of the dura mater, which is reflected over, and forms the peritoneum of the spinal canal and vertebral foramina. These three membranes envelope and insulate the nerves, and form their neurilemmas that incase the nerves in all their subdivisions to their points of destination.

Having thus described their phenomena, I will next give the method of their use. This is effected by a sinew being fixed to the lever to be flexed at one end, and at its muscular end it expands into an aponeurotic sheath that envelopes the bundle of muscular fibres and is attached to a process of bone above the lever to be moved. Parallel fibres fill the muscle sheath that are attached at their ends, so that when these muscular fibres become electrified by the charge from the motor nerves, the fibres expand in diameter and shorten longitudinally. This moves the limb. In the arrangement of these muscular fibres each fibre is surrounded by a membranous sheath that contains a multitude of transverse layers, that, when stimulated, enlarge their transverse diameters and contract the longitudinal. Inherent laws, as undefinable as the vital molecules that serve the ends of the nerves of nutrition, govern the action of the muscles. Muscular capacities are the servants of the mind; they become very profitable and able servants when they are trained to bring out the genius of their artistic skill and volume of power. Rapid, energetic and continued muscular effort induces a hurried respiration and rapid circulation, which respond to the drafts made upon them for muscular sustentation under exhausting application. If the muscles were not supported by the vascular and nervous circulation, they would very soon become exhausted.

This recuperative capacity is adequate to this necessity only for a given length of time, after which the muscular power begins to flag, and the person tires out; but not by the failure of the recuperative elements, but that of the motor nervora. Sleep is given to recuperate a fresh stock of this motor medium

of muscular action. After a night's sleep, the person feels strong and resolute to resume the task.

The danger of driving the system under exhaustion is greater than is generally apprehended. How many persons have thus lost their health by goading the muscles beyond endurance to gain a few more pennies! when, by judiciously dealing out graduated motion and power within the bounds of capacity, daily application can be endured and the greatest skill and muscular capacity achieved by this pruduntial economy.

The morning of life is the time to lay out for a well-developed and strong physical system, as demonstrated by the ancient Grecians in the development of their most powerful athletes. In the life of a man how much is lost in not demanding, in harmony with law, the skill and power in waiting to serve them. What has been achieved by one is accessible to all. Consequently, it is lamentable for such useful capacities to be allowed to slumber beneath the surface during one's life time, when they can be easily resurrected to serve and glorify the person by simply willing them forth with suitable energy and systematic training.

THE SENSES.

Photographic sketches are truly wonderful to persons who know nothing of the philosophical arrangement of the apparatus provided to cause these artistic designs. Daguerreau discovered the practicability of this art from observing the provisional arrangements of the eye to qualify it for the visual work of sketching objects.

If the sun is seen there must be a medium through which it can be revealed to the eye. This medium is light,which is as I understand it a thing to be divided between its designed qualities for appreciation and the artistic arrangements of the organ of vision to appreciate it. No other sense takes any cognizance of it. Sound is also divided between the arrangement of the auditory sense and the capacity of the atmosphere to report the movement of bodies in it. There is no light recognizable to any other sense but the eye; neither is there of sound but to that of the ear; each are dependent upon their specific media to report their work to the sensorium. The same holds true with all of the five senses; each having elemental media through which reports to the senses are effected. The offices of these senses are given to care for the animal as well as for the man. They in their care for man do not transcend their offices in the animal, but intelligence turns them to a far superior care. But these are not the senses that were provided for crowning man a being of immortal intelligence. The organs

of intellect are human entire. The organic arrangements for each of the faculties of the mind are dissimilar as are the provinces of their sphere of action. They are all special senses designed to officiate in their phrenological spheres of mind.

If the sense of sight can contribute so much to the intelligence of man, why does it not render the brute as much intelligent aid? The reason is obvious, they being deprived of their reasoning faculties to turn sight to scientific and artistic use. If the universe can be comprehended by the intelligent mind of God sufficient to institute it and sustain it in its present state of harmony, it surely must be comprehendible by the provisional mind of man; reared as he is by the structural universe, he will live upon these God-given principles eternally.

These divinely provided primates must surely illuminate the mind of man by the intelligence with which they are endowed to artistically construct and provide for all these special senses that render man so complicate and intelligent a being. Are not these intellectual faculties the living drapery of the spirit to furnish it divine care eternally?

When the sight is lost, mind turns in the slow process of furnishing objects for contemplation through the other avenues of the mind. If a person deprived of sight has acquired a great store of scientific knowledge before losing the sight, this knowledge will furnish a pleasurable field of contemplation that not unfrequently brings out some of the most valuable suggestions as contributions to scientifical and philosophical truth that flows from their deep-lasting meditations.

The half cannot be expressed of the loss of vision to the unfolding mind to the happenings of this life. It is better to crumble altogether and be emancipated from this darkness of perpetual night to bask in bright beams of celestial light. Turn to the loss of the sense of audition, and observe how much is shorn of the glory of this sense. First of all is the great loss of the enchanting sound of music and that of the sound of the human voice in language. The inspiration of music has its office in breaking up the monotony of gloomy associations, of troublesome reveries that tend to monopolize the mind to the injury of health. If the avenue of speech to the mind is perpetually closed, it is a greater loss than might be supposed without contemplating all its uses to mind. If the medium of speech, which is a written language, has not been acquired, surely all the world to the mute is dumb also. If the thoughts must arise from the sight of a dumb world only, what inspiring effect could it furnish upon a mind largely dependent upon interchange of thought for social happiness, or for a wider range of knowledge than that of vision, that reduces the world to a few square miles; having no anticipations of the arrivals of

friends nor sympathy with the transpiring events that make up so large a portion of the enchantments of life, and that so largely contribute to our stock of knowledge.

If the great danger of being overtaken in the dark tends to make life hazardous, my dependence is taken from me for security when I can not hear the approach of dangerous objects. If it injure me, I must suffer alone, not being able to sound the alarm for help. If I have lost my way, I can not enquire of those who know, nor make my want known to strangers. It is truly distressing for one in trouble not to be able to make his wants known to even those who would cheerfully render aid.

When this state of deprived sense befalls any one, it is but justice to have his lost sense substituted by education as much as possible. If this can not be effected, it is no charity to allow him to try to provide for himself, but he should be kindly cared for, if not by private, at public expense.

The sense of olfaction has its guardian uses, which sense is designed to judge of the quality of food and drink before tasting, and to inform one of the presence of dangerous decomposing substances. It is also a source of pleasure when inhaling delightful odors. When anything designed for food or drink disgusts this sense, it will endanger the system to indulge in its use, for the ever-watchful care of God thus admonishes through this sense to abstain from everything disgusting, and to fly with haste from every offensive odor.

The senses of feeling and taste have important utilities, their pleasures and discomforts.

SLEEP AND CONSCIOUSNESS.

This interesting phenomenal state is given to recuperate exhausted muscular capital.

The subject of sleep is one that philosophers have deeply contemplated, but hitherto failed to solve satisfactorily. Much effort has been made to find the hiding-place of consciousness when it retired within to repose. For the reason that sleep is common to the animal as well as the man, it has been inferred that they were all intelligent beings varying only in degrees. This error arises from the want of a correct knowledge of the boundary line that is drawn between the instinctive and reasoning faculties.

The human is based upon the animal economy; and where the animal instinctive faculties terminate the human begin to put forth the moral and reasoning faculties. Some have supposed that by joining the intellectual to the animal to constitute man that all animals ought to be immortal beings, if it pertained to man. The animal part of man is separated from the immortal part at death, and with the immortality is retained

the diadem of the moral and reasoning faculties. The animal is given with the vegetable kingdom, and must share the fate with it in supplying the food of man.

The deeper the state of sleep the nearer the normal state of the vegetable kingdom is approximated by the animal. The provisional difference existing between the two kingdoms is that the vegetable kingdom is supported by being attached to the earth, and having no need of consciousness, it remains in its normal state of perpetual sleep.

The animal, being detached from the earth, is dependent upon and provided with the faculties of locomotion, consciousness and the five instinctive senses to enable it to gather its food and drink and to care for its young.

The human race are brought up from the vortex of primitive matter through the mineral, vegetable and animal kingdoms to prepare them for the reception of the moral and reasoning faculties that crown the immortal beings. By this means man is enabled to occupy two states at the same time. The intellectual is the immortal part which is for a time attached to the physical plane of being, the object of which is to furnish an opportunity to multiply the species and to enrich the mind with science to enable it to supply the world with the works of art.

The opportunity that physical life affords man for gathering in the bright gems of scientific wisdom to guide reason in all investigations, and furnish food for immortal memory, is not only important for earthly care, but will furnish the incentive and ability for deeper research for the gems of wisdom in spirit life.

The conscious and unconscious states have their uses. The conscious is the wide-awake state, wherein the mind takes the helm to guide in all the muscular activities and reasoning faculties. The unconscious one is that of sleep, wherein the system recuperates from its expended muscular energy. The dermoid tissue or external skin is a network or garment of sensitive nerves, which is a medium of consciousness, dependent upon the vigor of the muscular system for its activity. But when the muscular power becomes exhausted, it loses its conscious power and relaxes into a state of repose. And why? The great venous sinuses that occupy the longitudinal and lateral fissures of the brain are composed of an extension of the dura mater or living membrane of the cranium that is in direct sympathy with the external dermoid tissue or membranes, to govern the tension of these cerebral venous reservoirs when the system is vigorous, and they yield the tension when it is laboring under fatigue. In this relaxed tension of these sinuses, which are called Faux, Major and Minor, they receive a much larger quantity of venous blood before imparting it, that presses on

the *corpus callosum*, that lies directly above the *pons varolii*. This brooding gentle pressure induces the unconscious state called sleep, and, with the return of vigor to the exhausted system, the tentorium becomes more tort to free the sinuses of their excess of blood, pressure ceases, and spontaneous wakeful consciousness returns. An alarm while sleeping given through the sense of audition, or hearing, or feeling, first induces a tension of the tentorium before the sleeper can awake. It is the author's opinion that the pons varolii is the direct central organ of consciousness that receives this impression from the pressed corpus callosum. Therefore the means for repose has its provisional arrangement in these Faux sinuses of the cerebrum under relaxation, and consciousness is restored by the causes that induce their tension to relieve the oppressed organ of consciousness. That this organ occupies this central position in the brain, the author has had satisfactory proof from biological tests.

THE FACULTIES OF THE MENTAL ORGANS.

The human race have a vital interest in more than their physical body. The human system has far more resources for sustentation than the oldest philosophers have dreamed of. It is God's method to propose the elements for the constitution of man through the agency of the combined efforts of the whole universal structure. The first motion matter made to form the universe had in it the design of man; and every department of it is doing its assigned share of transforming and improving the molecules that should construct and sustain the physical temple of man;—and the fruit of all its stupendous labor is man. This is the one object of the Supreme Being in organizing universal spheres, solar systems, planets, oceans, atmosphere, the vegetable and animal kingdoms, to culminate man an intellectual, moral and immortal being. Therefore, if mankind will seek the elevated position they occupy in the scale of being, let them fully comprehend the many faithful servants that God has employed to serve them. The heavens have trained matter in its fiery furnaces to travel through space with the velocity of two hundred thousand miles per second on the beams of light; to crystalize the great planetary arch to rear thereon all the kingdoms of nature as chemical elaboratories in which to perfect the primate molecules on which the human species depend for their advent and sustentation in planetary life. The same march of matter is constantly traveling through the many departments of universal nature to secure the perpetuity of life. When the immortal crown of human intellect was thus rendered complete, it was placed on the brow of man.

This was the immortal part joined to the highest order of the animal kingdom. It was both wise and useful to place man erect, that the hands might be at his command to serve him in all his works of art. The hand of the Divine is more perfectly seen in the production of the intellectual faculties than in all his magnificent universal works. Store the mind with scientific research, and train and bring into use the artistic genius of the hand, and it will loosen the bonds of the servitude of the race by supplying mechanical power to take the place of muscle. This work will not be complete until all the elements are in various ways serving man as chemical or motor powers. The human race were the last to be ushered into being, and will be the only beings that will triumph over mortality, to preserve their scientific and artistic attainments. The aid that intellectual attainment is capable of rendering, to protect, support, elevate and refine man, ought to be a sufficient incentive to make it a first business, and one that is worth striving faithfully and diligently to attain.

THE FACULTIES OF THE MENTAL ORGANS—VENERATION.

This organ is the archangel of the soul, and is the crowning wisdom faculty that knows how to go out after God; and ever has a high worship for all that is high and holy and supremely good.

When this organ is deficient, the person is unable to conceive of a Divine Being, and will feel no restraint in treating the name of God with disrespect.

This faculty is the one that conceived the telescope by which to inspect the fields of space, the result of which is a comprehension of the principles by which the heavenly bodies are governed: this drove the myths of astrology from the human mind, and founded in its place the sublime science of astronomy.

CONSCIENTIOUSNESS.

This faculty treats upon the principles of justice, and in proportion to the size of its development will be the righteousness of the conduct of the individual. When it is large it becomes philanthropic, and will look after the rights, of others, and will use all laudable means to deliver the oppressed from the oppressor. When it is small it does not hesitate to oppress when it will contribute to advantage. A luminous intellect is security for the righteous uses of this faculty. The happiness of man very much depends upon the obeyance of its dictations; for it will never cease to accuse the wrong nor to applaud the righteous. Character depends very much upon the state of this organ.

BENEVOLENCE.

Benevolence is the great benefactive principle of the universe. It is the Good Samaritan of the soul that is always charitably disposed when it is fairly developed. But when this faculty is small, it becomes selfish, and miserly mean, and very repulsive, and is thrown into spasms of clinched fingers when a penny is solicited for charitable purposes. Miserly feelings dwarf the soul and render one very unhappy.

HUMAN NATURE.

This is one of the sentinel organs designed to anticipate the designs of others. Much damage is sustained by imposition in business affairs when this organ is so deficient as not to furnish suitable protection. If it is wanting altogether, the person will be constantly tormented by confidence operators. The promises of others are accepted, but not being usually met. This will surely disqualify a person for extensive business.

FIRMNESS, OR THE WILL.

This is the executive organ that presides over muscular motion to help the person execute all of his designs. When it is large, the person will be vigorous and industrious; and just in proportion to the activity of this organ will be the energy in business and perseverance to complete designs. If this organ is small, the person will be indolent, and will be inclined to shun industrious pursuits, and will be ever looking for a streak of luck to set him up in the world. This tendency will ever keep him in low circumstances. The habits of industry developes this faculty, and, through the activity given to it by enterprising ancestry, has produced the energetic minds that are pushing forward the useful enterprises of this age. The strength of the person will much depend upon the size of this organ. It will be a dangerous organ when so selfish as to become obstinate.

THE GROUP OF THE PERCEPTIVE ORGANS

are in order as follows: Individuality in the centre, form order, size, weight, color, calculation:

INDIVIDUALITY.

This is the only faculty that enables persons to recognize each other when meeting unexpectedly; to separately observe minute objects, and thus become conversant with the properties and qualities of objects. It is indispensable to an artist or chemist, and is the principal faculty needed to constitute a good detective. If it is excessively large, it is inquisitive and

tattling, and makes a meddlesome neighbor. If it is small, the recognition of persons and objects is rendered difficult, and is a poor judge of qualities, and not given to a very close observation of objects, or the doings of those around him. This faculty can be best cultivated by mingling in society.

FORM.

This faculty is designed to see every deformity and defect pertaining to objects. It is indispensable to the sculptor, the limner and perspective architect. Small form is deficient in taste and artistic criticism.

ORDER.

This faculty is the distributing office of the mind. This labor-saving faculty is not usually turned to its full account in one's life-time. If it was it would furnish the accessible means of data adequate to store the mind with all useful knowledge in very much less time than is now required to attain it. By the use of order in preserving acquired knowledge, all the abstruse sciences are to be perfected. By the neglect of order, nine-tenths of the wisdom that is laboriously gained is lost to the world. This faculty is able to divide forces, and thereby accomplish many ends at the same time. In many ways its use may be turned to profit. The railway system compels the use of order to save collisions and to make it pay a dividend.

SIZE.

This faculty is given to help the judgment in determining the magnitude of objects, with the celeritv that they appear before the eye in the plane of vision.

WEIGHT.

This faculty presides over balance, and deals out the muscular energy to overcome the gravity of objects. Its judgment of weight is attained by lifting objects the weight of which are known. It gives grace to the movement of persons, when in a state of integrity ; but when deficient the person will appear awkward. It is the faculty that graduates the muscular energy that gives precision to the hand, and directs the force of the blow. It is the principle that keeps the planets in position and gives to them their orbicular motion.

COLOR.

This faculty is designed to enchant the mind with varieties and shades of colors. It is one of the faculties of the fine arts and good taste. When it is well developed its appreciative

faculty tends to refine the taste of the person. When this faculty is small, it is not a judge of color. Beautiful flowers will be unappreciated and their culture neglected.

CALCULATION.

This is a faculty of the mind designed to determine the end from the beginning. It is the grand thinker, and brings the principles of numbers to its aid in its castle building. It has measured the heavens, and given us the system of astronomy; it has estimated the density of the heavenly bodies, and thereby determined their relative gravitating forces. It may yet determine the relations of all things, for by it they have been instituted by the Infinite Mind. It is designed to be enterprising and to secure success. By its diligent cultivation, a person may rise from a gypsy to a Newton.

LANGUAGE.

This faculty was given to preside over the symbolic work of conveying ideas to others through the organ of speech. Language is the means of intelligence, and ranks first in the fine arts.

AGREEABLENESS.

This faculty is used to make friends; it is always disposed to agreeably entertain its associates. When it is deficient it is disagreeably contentious. It will neither pet nor be petted, and will make a very selfish companion.

IMITATION.

This faculty is the one that is used to copy the masters and stimulate one to excel in the fine arts. It is very susceptible of inspiration; hence so many inspired artists. Persons who are endowed with the most marvelous artistic skill always have this organ very large. If it is small, it can be best improved by working in some mechanical business.

MARVELOUSNESS.

This faculty is inclined to believe all absurd statements without the proper evidence. It is noted for running after every show that comes along. It makes a great many endeavors to complete a perpetual motion before finding it impractical. It never exchanges property profitably. It will make a gifted exhorter. When it is small it is sceptical, is inclined to think every one a deceiver. It is not inclined to help the destitute. It makes an incompetent jurist.

HOPE.

This is the faculty to encourage to enterprise. It proffers many times more than can be realized, and not unfrequently gets taken in with loss. Small hope gives no credit, and keeps its little bark near shore ; is fearful, and will never contract to perform as much as is practicable, and will make a penny operator. If it is deficient, it will break down under small trials, and will make a very disagreeable companion. It sees no flowers in the path of life, but full hope and large calculation makes a front-rank operator.

SELF-ESTEEM.

This faculty is designed to guard the character of the person. It stimulates to deeds of excellence, and is well calculated to urge the person forward to claim the first rank in society. It will work for self-elevation and distinction, and is apt to be in too much of a hurry for promotion. It is doing more to arouse genius and make worthy citizens than any of the others. It is a law of mind to concede the respect that the personal deportment claims. We must keep our armor bright to reflect the lucid light.

APPROBATIVENESS.

This faculty of the mind is the one that is desirous of flattery, and will take great pains to elicit it. It will do many favors to obtain the approbation due to them. When large, if it is disappointed of approbation, it will banish the offender for ingratitude. When it is small, it renders one indifferent to compliments, and uncourteous.

COMPARISON.

This faculty is the one that judges of the quality and value of things by comparison ; and that reasons from the known to the unknown. It does not wish to decide in the absence of the proper evidence. It is ever comparing and classifying objects and principles to deduce therefrom sound data on which to base judgment. When it is small, it is a poor jurist and not a good judge of qualities, and will not make very rapid mental advancement. Is not a close observer, and is apt to be very bitter in denunciations.

CAUSALITY.

This is the thinking, comparing and reasoning faculty. This is the sensible faculty when the work of the perceptive faculties are inspected and edited ; and when the conversation of persons is received to find their intentions. This faculty, when

large, adds profound reason and weighty judgment. This faculty is the one that culls our thoughts for composing. When large and well cultivated, it will compose rapidly enough for public speaking. It then is not easily decoyed from its collected reasoning balance, and gives great gravity to personal deportment in debate. When it is small, it will not reason profoundly nor compose sufficiently rapid for a public speaker. No person can become gifted in composing without this organ is full. When it is very large, the person will be inclined to become a voluminous author.

MIRTHFULNESS.

This faculty is the critic for statements and appearances, and can not refrain from laughing at the ridiculous. It is the pleasant scourge designed to drive mind from ridiculous inconsistency to dignified consistency. It is companionable, consistent, and courted in the social circle. When deficient the person is sedate and not pleased with a joke.

IDEALITY.

This faculty is very desirous of discovering some thing new. It will bring a collection of ideas, and use them to elucidate the subject under consideration. If it is very large, it will make a lucid writer. If this faculty is brought out to its designed ability, it will be able to scale the heights of eloquence beyond that of Demosthenes or Cicero or any of the oriental masters. If this faculty is small, the person will not make a favorite writer, nor a good point. If this faculty is cultivated, it is but accomplished by continued efforts at composition on serious subjects.

SUBLIMITY.

This is the faculty of the mind designed to be inspired by stupendous objects, such as high mountains, tremendous cataracts, and tempestuous thunder storms. It is ever endeavoring to comprehend the Mind that controls these sublime objects. It is always contemplating some gigantic philanthropic plan by which to benefit the whole race of man. It is awake to the sublime works of art, and has a high appreciation of the minds that produce them. It is the strong man in the household of mind, that thinks that everything can be done that is expected of finite mind. The person who has this faculty large will appear noble and manly, and make a splendid appearance in the world. When it is deficient, the person is not inspired by sublime objects, nor apt to engage in great enterprises.

CAUTIOUSNESS.

This faculty is the one that is always on the lookout for danger, and will plan in good time a splendid retreat. It will

always try to have every thing strong and sure, and a little to spare. It is good to provide, and when it purchases a bill it thinks it had better take a little larger pattern. It watches over all the operations of all the organs, and admonishes them to do well their work and leave nothing at loose ends. It can not enjoy happiness and be in debt. It is the sentinel of the mind that never sleeps, and ever has its hand on the bell-rope of alarm. When this faculty is small, it is fearless and indiscreet.

EVENTUALITY.

This faculty is abounding with past events, and is the keeper of the dates of their occurrence. It makes a good historian when in a state of integrity. When it is deficient, it finds it difficult to retain the dates of passing events, and has to depend upon record for their data.

LOCALITY.

This faculty is designed to preside over personal navigation. It is ever on the lookout for the four cardinal points, to enable it to keep its bearings correctly. It is the compass of the mind. When this faculty is deceived the person feels lost, even if he well knows his geographical position. Its greatest use is in navigating extensive prairies and broad wild oceans.

TIME.

Time is the faculty of the mind that conceives the rhythmic order of movement that gives taste to the varieties of musical discourse. It enables armies to mark time at the beat of the martial drum, and move together in close order as one man. If this faculty is wanting, it disqualifies one for a soldier, or the appreciation of the musical fine art.

TUNE.

This faculty comprehends the harmony of musical tones, and the value of the arrangements of musical composition. Time and tune, or rhythm and volume, are two principles used to direct the harmony of the universal movements of the heavenly bodies.

CONSTRUCTIVENESS.

This faculty is the inventive genius that is ever striving to harness every motive power to work for man. It is the parent of all the mighty engines and handicraft now in use in the world. It inspires man to become familiar with the science of mechanics and the mechanical arts, and thus it qualifies mind to complete the pending system of inventions that belong to the highest class now in use.

ACQUISITIVENESS.

This faculty was given to man to lay up for the time of need, to perfect his taste, and bring out the great institutions of the age. This faculty is the savings bank of the individual, and it has secured abundance for self and those dependent upon it. It is a useful, laudable and commendable faculty when in loyal keeping.

SECRETIVENESS.

This faculty of the mind is the inner chamber where no one is ever permited to enter. The private counsels of the mind are recorded there. The rights of this personal citadel are divinely conceded and respected. Personal character sits there unmasked in its uncompanionable miserly hall. When this faculty is large, it requires a crafty detective to decoy it. When the person is governed by the principles of righteousness, it is a sanctorum of honor and the heaven of the soul. On the contrary, when the person is governed by unrightous strategy, it becomes a place of dishonor and the hell of the soul, wherein sometimes might be found dead men's bones.

DESTRUCTIVENESS.

This hardy faculty was not given to destroy the world of living human beings; it was given to pioneer the settlement of new countries; to brave the dangers of a frontier life, and do the rugged work of encountering the wild beasts and destroying the old forest, and thereby officiate as a sapper and miner for the car of civilization. It makes a brave soldier, one that will bear hardships and privations without murmuring.

COMBATIVENESS.

This faculty is given for personal and national defense; to protect the family circle and the defenceless. When it is large, it is easily decoyed into an altercation, and wonders how other persons keep out of such troublesome melees. It is disposed to oppose other persons' propositions, and contributes to a quarrelsome disposition. By this bullying propensity wars are inaugurated.

ADHESIVENESS.

This faculty of the mind comprehends the elements that enter into the fabric of social happiness. It is pained when friends part and rejoices at their return. It has just claims upon friends for kind sympathies and gentle courtesies bestowed, and when they are not recognized by a kind return, it holds them guilty of ingratitude. But this faculty will live to find all its lost jewels beyond the grave, and to receive the rewards due

for all the kind offices bestowed in this world. If this faculty is deficient, no binding attachments will be formed, and the person becomes a deficient member in society, a rejected block in the temple of social happiness.

UNION FOR LIFE.

This faculty does not mature until the age of puberty; then it is inclined to travel to find a suitable companion. It is very restless and unhappy until it finds one. When custom shall allow the female to perform her ordained work of choosing her beau ideal companion, the inspiration of her love and worship will ever unite their interests in life.

AMATIVENESS.

This faculty does not mature until the age of puberty. It is designed to attract the sexes and stimulate them to prolificate the race. This faculty stimulates to self-culture and refinement to merit the first position in society, as a means of selecting a companion of similar refinement and taste. It helps cement companions for life, and stimulates an ambition to support a companion in good style. It renders one civil and courteous to the opposite sex. When this faculty is deficient, it renders one selfish, uncourteous and unattractive, and will neither pet nor be petted, nor be disposed to support a companion.

PHILOPROGENITIVENESS, OR PARENTAL CARE.

This is the wisdom faculty given to rear and train the offspring. It is the Divine way of protecting and qualifying the young for self-support. It has ever a tender watch care over them, and is much surer to look after their welfare than their own. It is distressed by anything that militates against their health, reputation or prosperity. It has a great many vigilant outposts to guard their interests. It sounds the condition of the outside world to find the evils that may harm them, and fraternizes societies, to regulate them. Hence come improved governments, and all the humanitarian societies in the world.

INHABITIVENESS.

This faculty is given to make man a local being, and to keep families together. When large it expends much for home comforts, and has the endearments and comforts of home to attract a speedy return when away. When it is deficient, it makes a good itinerant that feels at home wherever night finds it.

MIND.

Intelligence seldom fails to emancipate the higher minds

from the necessity of braving the hardships of physical life. The Divine method of caring for man is through the cultivated reasoning faculty of the mind ; and if all will avail themselves of God's highest provisional means of personal protection and care, let them consult their highest mental susceptibilities, through the media of energetic culture of the mind ; then they will not fail to find in it an intelligence capable of warning against dangers and of pointing the way of the most available means of life. It has called to the aid of man the motive powers that be to turn the manufacturing wheel, to drive the ponderous train. It has harnessed an imponderable element to transmit intelligence over continents and through the depths of the ocean with infinite flight, through the darkness as swift as in the light, yet this system of human service will not be complete until every available element known and unknown shall be rendering some service in their assigned place to bless the human race. Yet there are many lessons to be mastered by these pioneers of thought before all these inventions into use will be brought. This race of mind is open to all ; each principle gained is a unit of the whole ; the more of these principles are gained, the easier are the successive ones obtained. Being unknown they serve to make the delay that exists in the present age. Cannot this duty be more impressed on the minds that are now on the stage ? To kind Providence is our reason referable. Reason is given to serve humanity in the place of instinct; therefore, the first duty we owe to ourselves is to cultivate the faculties of the mind. It requires a long drill to become eminently skilled in music. Give the other faculties as thorough a drill, then the person would be accomplished in them all, and thereby carry out the Divine designs by which to develop and bring into use the highest possible capacities of intellect. Then persons thus mentally matured will not become subject to monomanias, nor be driven from their mental balance into insanity by them. Private life does not furnish the incentives to intellectual attainment that is stimulated by one more public.

In making a choice of occupations we should always select the one most adapted to our taste and acquired abilities ; then the task will be a pleasant one, and stimulate us to excel in it.

The boundary of the intellectual faculties can not be reached by the most industrious culture, in a single generation. It will require many of active culture and its acquired genius transmitted to posterity, before it can reach the Divinely designed capacities of the powers of intellect. Yet notwithstanding the great abilities mind may attain, its reasoning faculties are subject to be rendered imbecile and incompetent by great physical debility, and dethroned by certain systemic derangements.

INSANITY.

By reason of the systemic derangements not being comprehended on which insanity depends, benevolent lunatic asylums have been instituted at a very great public expense to furnish all possible means known to reclaim the lost balance of these reasoning faculties of the mind. This effort is well; it is noble and generous, and manifests a sympathy for those who are suffering under this great calamity that mind is subject to. An asylum for the insane is designed to furnish a place of pleasant scenery, of quietude, rest and tender care. What aid these facilities can not furnish to recuperate the systemic derangements on which insanity depends, must be looked for in rational medication. The dependence of insanity being more upon systemic disease that congests the mental organs than mere mental hallucination, more aid can be expected from correct medication than from all these expensive facilities, and I think that we will be able to elucidate this point so clearly that it will eventually do away with the necessity for this great public outlay for the insane.

Each group of the mental organs has an artery and a vital nerve accompanying it sent to ramify and support every fibre. This nerve is sent out from the upper portion of the superior cervical ganglia of the sympathetic nervous trunk. This ganglia is situated in the neck in front of the second vertebra. It is about one inch long, and is connected by twigs to the four first pairs of cervical nerves, and eighth and ninth pairs of the nerves of the brain. It sends off slips to the trachea, glottis and larynx; it entwines the coats of the carotid artery, and accompanies it to its points of destination. In its ascent through the carotid canal, it forms connections with the fifth and sixth pairs of nerves, and helps form the superior carotid plexus that sends out small nerves to help form the balance of the system of cerebral sympathetic ganglia.

The diseases most dangerous to fatal inflammation of the brain and that tend to stricture these ascending sympathetic nerves that support the two hemispheres of the cerebrum, are putrid sore throat and diptheria.

In more than one-half of the cases that prove fatal in these diseases, death ensues from inflammation of the brain, which is simply due to a mechanical stricture of these nerves, rather than from the local ulceration, and wherein the pressure of the congested parts upon the neurilemma is by no means damaging to these nerves. Could this stricture be momentarily removed, they would be in good condition to resume their vital work. The diseases most common to induce partial paralysis of these nerves are, congestion of the spine in the periosteum

in the passage of the nerves through the vertebral foramen sufficient to obstruct the passage of the neurine or vital molecules designed to pass through these nerves. This stricture is the most common one that is found in chronic insanity. Tracheitis also results from this spinal stricture ; consequently chronic tracheitis is quite generally present in cases of lunacy.

When the mind is blinded by derangement in its reasoning faculties, it is merely lost during the time that the organs are thus disqualified by disease. The organs of reason are dependent upon a state of health to be able to judge correctly of the properties, qualities and relations of objects, and of the motives and rights of others. In all cases of lunacy the inability to reason is solely dependent upon congestion of the mental organs, which is mainly due to the disqualification of the ascending sympathetic nerves, either at the spine or by stricture in their transit, that obstructs the passage of the vital molecules on which the mental organs depend for sustentation.

When the spine is congested at the seat of a sympathetic ganglia, the organs dependent upon the ganglia lose their most direct molecular supply, which induces a low standard of vitality, if not a more dangerous inflammation in the organs that these ganglia are designed to support. The trunk of this sympathetic nerve is supported by the medulla spinalis, by uniting with each pair of spinal nerves at or near their exit from the vertebral foramina. The organs derive a tardy support from the spine through these connections of the sympathetic trunk with the spine when congested at the roots of these ganglia. Why is this alternate provision ? It serves two purposes : first to furnish a greater supply of molecules for respiration and cardiac motion, and secondly to furnish access to the spine for a response to the splenic rallying supply for the spleen and the organs, when this support is cut off by spinal congestion at their direct nervous centers. By this means the organs are supported during the time required for this local congestion in the spine to subside.

When spinal congestion occurs at the seat of the superior cervical ganglia, to obstruct the direct supply for the ascending sympathetic cerebral nerve, support is sent to the brain from this sympathetic trunk in response to neuralgia of the brain that is induced by congestion from its direct support being cut off by this spinal obstruction. This feeble supply induces tardy intellect and a clouded memory.

When this ascending sympathetic nerve is strictured permanently, both of these sources of cerebral assimilation are cut off and the patient soon dies with inflammation of the brain. It will then appear that insanity is dependent upon a partial stricture of this nerve either located in the ganglia or some-

where in its transit to the mental organs sufficient to induce in them a state of chronic congestion.

This derangement is generally consequent upon glandular obstruction that depraves the circulation and induces membranous congestion.

In cases of insanity, if no cause of the stricture of this nerve can be found below the carotid canal, it is most likely to occur in its transit by one of three causes, viz: congestion of the periosteum, or of the neurilemma, or aneurism of the artery, so as to only partially and irregularly supply the mental organs.

In such cases arterial excitement increases this obstruction; and in most cases of insanity more or less intermittent symptoms are present to induce periodic accelerated arterial excitement, that serves to increase the insanity during the exacerbation.

The spinal vertebral arteries are sent to support the cerebellum and the domestic organs, that lie at the base and back of the brain; and combinations of nerves from the ninth and tenth pairs, with the sympathetic, accompany these arteries in all their basilar combinations to their capillary points of destination, and preside over the vitality of the organs to which they are sent. One principle governs the mode of recuperating and providing for all the mental organs; and similar results obtain when in a state of congestion and inflammation. When congested, their faculties are too much driven for their sane use; then comes confusion of ideas, every subject has to be turned into its tide of lost reasoning. Mind is dethroned when the circle of reasoning faculties has a disenabled member among them. When this state pertains to the cerebellum or any of the domestic organs of the back brain, the faculty of the diseased organ becomes unusually predominant.

The danger of falling into a state of lunacy depends upon the derangements herein set forth. Therefore it is to be hoped that this knowledge will eventually save multitudes from lunacy, and the States the necessity of supporting lunatic asylums.

DELIRIUM TREMENS.

This disease is a species of insanity peculiar to inebriates, and caused by a habitual use of alcoholic beverages carried to a state of intoxication and persisted in until this species of insanity called delirium tremens obtains to deprave the senses and cause fearful forebodings, such as being hunted by enemies, haunted by demoniac personages, serpents in their boots, and an interminable cavalcade of spectres filled with evil designs.

The motives of their best friends are challenged as enimical, and their acts f kindness are suspicioned as deceptive blinds, to prevent vigilant watch while they were preparing to spring their plot of destruction to person or property. With these depraved imaginations to furnish motives for defensive action, it is very plain to be seen how dangerous a person a drunkard may become, when governed by these delirious hallucinations, and how irresponsible they thus become for the commission of acts that are criminal when committed by persons of sane minds, placing the motives to commit illegal acts beyond the possibility of comprehension.

The following successful treatment was discovered by the author over twenty years ago, one that has not failed to furnish the desired relief in from twelve to twenty-four hours.

℞ Nitrate of Potassa grs. 20, Water ℥ iv. Mix. Dose ʒ ij every half hour until it is all taken. In one hour after beginning the use of this solution give Podophyllin grs.ij in a teaspoonful of cold water. Also from the beginning of the treatment use ℞ Cypripedin grs. 48, Alcohol ℥ i, mix to cut, Hyoscyamus extract grs. 32. Dissolve the Hyoscyamus extract in hot water. Wintergreen ʒ ii, simple syrup ℥ ii. Mix Cypripedin and all together. Dose one teaspoonful every hour until the patient sleeps; then extend the doses to two or three hours. After the urgent symptoms have subsided, by using a dose every six hours for a few days, will so well support the nervous system as to preclude the desire for spirits.

TRIFLING WITH FIRST DEPARTURES FROM HEALTH.

TARTAR ON THE TEETH AS A CAUSE OF DISEASE.

By allowing tartar to accumulate on the teeth not unfrequently becomes the primary cause that leads to many systemic derangements called disease. This tartar intercepts the gums from the teeth and inflames them. When this inflammation extends to the periosteum of the alveolar processes, it encroaches upon the dental nerves, causing painful sensitiveness called teeth-ache, but more properly neuralgia of the dental nerves.

If this tartar presses the gums from the teeth, they will lose their recuperative aid from the nerves ; then the teeth die and grind down easily or become carious. When the nerves are exposed to the air and the fluids taken into the mouth, they become perpetual causes of aggravating this neuralgia. The damage that this tormina does to the system is by injuring the distributive work of depositing the vital molecules uniformly at all points or parts of the system. When there is a rally at

one point, it is at the expense of all other parts for the time being. If this rallying cause is continuous, it will bring on a seditious inflammation of the diseased part to remove the offending cause. If the teeth are carious, it is then said that the teeth ulcerate, and its frequent ulceration makes it an ulcer tooth. If every tartared tooth was more perfectly looked to and kept clean, this cause of disease would be avoided, which is very important, for this derangement not unfrequently disarms the system so much that it falls an easy prey to many other assailing diseases. If this derangement is allowed to disturb the sleep, it will bring on an asthenic state of the system that centres upon the organs of digestion, and impairs them for performing their functional labors with integrity. The appetite then fails, and brings on head-ache and bilious obstructions, constipation of the bowels and nervous irritability. When these derangements have taken the system beyond the usual time for regaining its balance, then the derangement will become chronic, and early symptoms of lung disease will follow. In this stage it is time to ask the advice of a physician. It is now important to do as a preparatory measure: first, remove the carious ulcer teeth, then look after the liver and glandular obstructions; also, treat the morbidly sensitive nervous system with anodynes to secure repose; then use good spinal tonics to tone up the system. This course in a reasonable time will restore the lost balances of the system again.

I bring forward this concatenation of causes as a fair specimen of the many ways that the system loses its balance of health by neglecting to attend to what most people call trifling derangements. *Neglect* to attend seasonably to first departures of the system, and *Bravery* to stand pain, are two of the sons of ignorance that die out early.

I do not suppose that a person can take too good care of this living temple that God has placed under their charge, and through which all the Divine bounties of this physical life must come to the individual. Secure health is the road to wealth and fame.

TAKING COLD AS A PRIMARY CAUSE OF DISEASE.

Every disease which is culminated by taking a cold is referable to strictured nerves in their passage from the oblongata or spine, by congestion of their investing membranes. Let us trace the concatenations of this slight and generally neglected derangement, to see the great amount of mischief that may result from it. What is a cold? When a person is exposed to a cold current of air, or sits upon or leans against a cold body capable of extracting the caloric from the system faster than it can generate it, the thermal condition of the part will be

sunk below the standard required for nutrition. Then congestion begins. If this exposure to cold is continued a sufficient length of time to induce congestion of the investing membranes of the cerebro-spinal axis, it will obstruct the nerves that arise therefrom, disqualifying them for the nutritive support of the organ or part dependent upon these nerves for vital support. Then a secondary congestion will ensue. The first congestion, which is located in the spinal axis, is the result of abstracted caloric; the second is located in the organ or part dependent upon the obstructed nerves to furnish the nutritive support. When nutrition becomes suspended by reason of cold only long enough to fill the capillary arteries to their elastic capacity, no harm will result if the person speedily regains the warmth again from a warm apartment, or otherwise to resume nutrition before the serum begins to escape from the walls of the distended capillary arteries. But if the capillary arteries become crowded to a greater distension by the continued force of the heart, the serum of the blood will begin to escape through meshes of their over-distended walls into the cellular membranes: this is called *effusion*. This effusion induces a congestion in the part that requires febrile action and time to overcome. This makes up the phenomena of a cold. This first congestion in the spine must recuperate before the obstructed nerves can be fully restored to induce assimilation in the organs under their vital control. Therefore, in the organs time is also required to overcome this secondary congestion after the nerves are liberated before the effects of the cold fully subside. If this recuperation in the spine is tardy in relieving the nerves, the organs affected by it are jeopardized, lest fatally acute or chronic organic disease result.

It is universally admitted that coryzal catarrhs and blennorrhœal coughs arise from colds. It is also a frequent remark made by many persons, that they take a cold much more easily than they used to, and that when they get one it requires more time to recover from it. And so it is that in repetitions of any kind of disease, a growing chronic debility of an organ or part that induces a decline in its recuperative powers will obtain.

When the back of the head is exposed to cold to a certain extent, it will induce congestion of the membranes of the medulla oblongata, and obstruct one or more of the three roots of the fifth pair of nerves. The Trigeminus, or fifth pair of nerves, arise from the crus cerebelli, and pass out the right and left sides of the pons varolii that caps the oblongata. They each, after uniting their three roots into a ganglion, divide into three great branches of nerves, the *upper*, the *middle*, and *lower*. When the upper one is thus obstructed, it induces congestion of the membranes of the superciliary sinuses, and the inner

membrane of the eye lids. When the middle nerve is obstructed it induces congestion of the membranes of the nose and palate and the obstruction of the lower branch induces congestion of the throat and fauces. Consequently, from the damaged state of the upper branch comes ophthalmia tarsi; from the middle, catarrh; and from the lower comes inflamed throat, tonsilitis, diphtheria, putrid throat, etc., when the systemic bias and other derangements of the system come in to give it one of these types.

When the cold induces congestion in the medulla spinalis, at the upper cervical nervous centre, it will induce laryngitis and tracheitis, which augment into croup, when complicated with severe glandular obstruction, and not unfrequently induces cerebro spinal meningitis. When the spine is congested at the cardiac nervous centre, and the eighth pair of nerves is impaired, it will induce bronchitis, which, when complicated with glandular obstructions and constitutional debility, will degenerate into tuberculosis, and the system sink then under phthisis pulmonalis, (or consumption) by a succession of these colds. When it congests the spine so as to involve the solar plexus, the liver and pancreas, which receive their functional nerves from this centre, will be congested, and their functional secretions suspended. When the congestion occurs at the renal plexus, the kidneys will become congested and obstructed, causing an overflow of their secretions into the circulation, inducing either fever or inflammatory rheumatism, the order of which will depend upon the disturbed state of other nervous centres and the condition of their dependent organs. When the cold congests the spermatic nervous centre, (at the small of the back), it will induce derangements of the reproductive organs. When the sacral centre is congested, it will induce piles, when complicated with portal obstruction, and dysentery when complicated with glandular overflow of the renal secretions. If congestion of this sacral centre is complicated with congestion of the sciatic centres, it will induce sciatic rheumatism, the intensity of which will depend upon the number of the sciatic roots involved in the congestion, and the state of the glandular system at the time.

These derangements are the most common ones that take their origin from taking a cold, which has thus made these great inroads into the health of the people.

THE RENAL ORGANS,

AND SOME OF THE SEQUENCES OF THEIR DERANGED CONDITION.

The causes nor the manner by which the renal organs be-

come injured have not been very well defined by medical writers. Neither have the sequences of their deranged conditions been properly traced to the systemic derangements arising therefrom.

The official work assigned to these organs in the systemic economy is directly that of depuration from the circulating arterial blood, its redundance of water not exhaled by perspiration, and every other element finding its way into the circulation detrimental to nutrition. Their normal work, when no errors are committed in diet, is the extraction in the secreted urine of the worn element of the systemic fibres exchanged for those of fresh vigor in the chemical work of nutrition. This state of systemic exchange exists in a state of health uniformly during life. The kidneys are competent to do this work without suffering any exhaustion in times of health. But to add to this labor the work of clearing the circulation of sour and rancid food is to worry the kidneys to exhaustion. Then comes congestion in the secretory vessels that receive the capillary arteries and send out capillary emulgent veins and renal ducts. The excretory ducts become obstructed with the serous effusion from these congested membranes. When these ducts become obstructed, the urine secreted sets back upon the venous capillaries, and forces its way into the circulation to interfere with nutrition. A notable point is, that after these ducts first become obstructed with serum, that in their effort to clear themselves they become solidly packed with concrete albumen. These long-continued obstructions furnish the opportunity, when in a habit of using limy water, to form lithic granular deposits, the phosphate of lime, and urea under electric action, combine to form the lithic granules which are slowly crowded through the ducts into the pelvis of the kidneys. These granules are microscopically small, with sharp angles and points. The sharp angles of these granules often wound the membranes of the pelvis of the kidneys, and induce hemorrhage that passes with the urine. They also irritate and wound the mucous membranes of the bladder, when they are pressed between the folds of the collapsed organ, and thus become the source of cystitis of a very obstinate character. When this mucous membrane becomes so much congested by the injury of these lithic granules as to induce the exhalation of a serous mucous insoluble by the urine, and too tenacious to be passed, a quantity of these lithic granules becomes imbedded in it, which is plastic at first, and moulded into a rounded form by motion while it is becoming electrically cemented and hardened. The nucleus of the stone thus formed will continue to attract the phosphate of lime, and being im-

mersed in urea they chemically contrive to enlarge the same. This calculus is thus formed as a sequence of improper renal taxation by the habitual use of injurious beverages and articles of diet. This lithic derangement of the kidneys, when once formed, becomes habitual. The kidneys then cannot, without aid, freely clear these ducts. The state of these organs makes the largest number of the systemic derangements. In the author's observation of the concatenating causes that make up the types of diseases, he has found that the various derangements of these renal organs play an important part to prolong the disease, and especially so in chronic diseases. To only depurate a part of the accumulating impurities from the circulation, and less than are accumulating, will soon reduce nutrition to so low a standard as to induce general congestion throughout the systemic capillaries. Most of the fevers have this cause prominently connected with them. The depuration of these impure elements not being effected, they have to be consumed by the excessive combustion set up in the capillary system by nervous rally in response to capillary congestion. The excessive quantity of electrical elements furnished by this excitement effects the combustion of these elements that were incombustible under the normal quantity of neurine furnished by the nervous system. This excessive combustion thus induced for this object produces the excess of caloric that raises the temperature of the system to what is called fever heat. When, by systemic debility, the vital nerves are rendered obtuse to this systemic capillary congestion, the arterial plethora will call into action the spleen to goad the nervous system to perform this work more effectually. After the patient has been thus rendered sensitive to pain, the vital neurine is forwarded to the points of nutrition with that quantity needed to fuse this poor combustible material. Many persons never have more vitality than is required to support the system, without any for labor.

Those persons whose circulation is depurated the most unsuccessfully require the greatest nervous expenditure, and the most rapid circulation. This is one of the most common causes of that general debility which induces the tubercular habit of the vital organs.

Inflammation of the kidneys always causes a painful sensation in the hypogastric region that causes the patient to bend forward, or curl up, as it is often described, to relieve the organs from the pressure of the abdominal viscera upon them. The one particular diagnostic symptom in this inflammation, is that of nausea and protracted vomiting, connected with this local pain, to relieve which, apply a towel wrung out of hot water, and lay over the painful part as hot as the patient can

bear, and change every four or five minutes. Also give 15 grains of nitrate of potassa in one-third tumbler of cold water. Give one-fourth of it every half hour; then give 1 grain of podophyllin. This treatment is reliable.

RENAL, OR KIDNEY DISEASES.

Every kidney disease has its deranging effect upon the quality of the blood. As is the health of these organs, so will be the state of the system, other combinations of causes being considered. They seem to hold the office of judging what elements should be ruled out as being unfit for the perpetuity of life. A large proportion of glandular derangements are derived from contaminated air. By lacking the judgment of the conditions of localities fruitful of contaminating gas, we fall an easy prey to renal congestion. Blood nominally is composed of water 90½; albumen 8; chlorides of sodium and potassium 6; lactate, soda and extractive matter 5; soda and phosphate of soda 4, in 100 parts, bearing in mind that every foreign article introduced serves to change this composition, if not depurated from it; entering into the blood by respiration, as vital supports are oxygen and nitrogen, and from a chemical interchange in the lungs is derived the hæmatine. When other gases enter the lungs with the oxygen and nitrogen, it is at the expense of a measure of these vital chemicals to produce the proper quality and quantity of these primates, designed to be produced in each chemical evolution following each inspiration of air. Again, if the gas intruding be that of carbonic acid, it lessens combustion, and also prevents the depuration from the circulation a quantity of carbonic acid equivalent to that inhaled. The accumulation of this carbonic acid in the system renders the blood less combustible to render nutrition more defective. When the functional work of the kidneys is taxed beyond endurance, remove this carbonic acid from the circulation, the ducts become obstructed with albuminous secretions. In this condition urea is turned through the emulgent veins into the circulation. Then these disturbing elements in the system have to seek an alternate means of disposal. A higher condition of the system would here be very useful in this alternate effort, in order to make a complete success in expelling these impurities through the dermoid tissue. Yet, there is a united force culminating that keeps pace with this abnormal condition of the blood that eventuates, with this combination, in an intermittent febrile exacerbation. Pyelitis follows lithic accu-

mulations that mechanically wound the membranes of the pelvis of the kidneys. Nephritis may be induced by the presence in the kidneys of strong diuretics, as the oil of juniper, turpentine, savine and tansy, which is of short duration when the vital renal nerves are in a state of integrity. But the most common cause of nephritis, or inflammation of the kidney, is a direct suspension of the vital nervous support, whereby nutrition in the organ is suspended. Then follows the congestive pain in the organ. In the enlarged white kidney the cortical portion is enlarged from four or five ounces to ten or twelve ounces. The external membrane presents a whitish, mottled or marbled appearance. The pyramidal cones sometimes preserve their compact appearance and well-defined outline ; in other cases they are more or less obliterated, and the tubes separated from each other. The cortical portion generally, and sometimes the medullary portions, are devoid of the sanguineous portion of the blood. The surface is dotted with numerous white or greyish points, and, when the organ is bisected longitudinally, these points are observable on the incased surfaces. The organs are rather flaccid, and less resisting than in health, but not much softened.

BRIGHT'S DISEASE.

In reference to this ænemic condition of the kidney, a continued fever is often found resulting from its abnormal condition. In this continued fever we find the pulse at 90 to 110 per minute, and small. We also find hæmatine deficient. A large proportion of the red globules are wanting to give a proper support to nutrition, and muscular and nervous power thereby diminish together. Much of the nutriment is derived from the adeps of the system, as a continuous draft upon the systemic capital while alimentation is suspended. The capillary arteries of the mucous membranes lose their wonted firm elastic tension that preserves them against capillary aneurism,under an undue force of the heart, and hemorrhagic passages of the bowels often occur. The kidneys are also subject to hæmaturia. The skin is relaxed and humid. A succession of chilly sinking symptoms, that rally again ; but it will be noticeable that after each successive sinking symptom the rally is less complete, and with the breaking down of the pyramidal cones of the kidneys, death ensues.

The coma that precedes the giving up of the ghost in protracted fevers, instead of the coma being induced by uremic poisoning, as supposed by Dr. Flint, is directly due to a suspension of the vital nutritive support of the cerebral organs of consciousness.

ATROPHIED KIDNEY, OR, THE HARD, CONTRACTED KIDNEY.

These organs, in well marked cases, are reduced in size and weight. In a case of extreme atrophy, cited by Wilks, weighed together only one and one-half ounce. The cortical portion is diminished, and in extreme cases the pyramidal cones extend to their exterior surface, and their sides may be nearly in contact. The organs are dense and resisting, The capsule is with difficulty detached, and when forcibly removed brings away a portion of the torn parenchyma. The surface is sometimes smooth, in others lobulated, and sometimes roughened by irregular elevations, presenting a hob-nailed appearance. The microscope shows absence of epithelial structure within, in more or less of the uriniferous tubes, and an abundance of granules. The tubes are more or less shrunken or obliterated. Frequently numerous cysts are seen with the microscope, and frequently with the naked eye. The atrophied waste of the organs is mostly in the cortical portion. It is particularly this condition of the kidneys wherein we find hæmaturia, which escapes through this deranged secretory apparatus; also, from the excessive burden they have to perform in so prostrate a condition, while their vital support is kept from them. The nerve element being mostly missing, induces deficient nntritive support; nor do the functional nerves render their wonted aid.

A concise statement of phenomenal symptoms in this case is wanted in the medical treatises, therefore I offer to supply them, leaving them open to criticism.

Finding half of the direct provisional means of nutrition with the vital nerves, which combines with the aliment in the circulation, to support the continuity of life in each fibre of the organs; hence, a derangement in the renal vital nerves, which renders their supply inadequate to effect standard nutrition tends to ænemia. If this draft upon the renal vital nervous centre was properly honored, the vitality of the organs would be at standard, if no impediment existed in the circulating blood. Again, if the nervous system was in a state of integrity, and the blood at fault, this fluid, being homogeneous, all parts of the system must necessarily partake of this ænemic condition. But as the derangement is one of a local character, we are compelled to find the vital nerves of these organs deficient. This atrophy is not necessarily dual, for one hemisphere may be affected only, while the other may be in a state of integrity. When the impurities are not depurated with promptitude, a proxy is called to supply the deficit. In such a case resort is had to other glands, the dermoid and mucous membranes. If

the task to render the circulation assimilatable is great, these alternate agents will become exhausted, and form thereby the various membranous diseases corresponding with the character of the element thus depurated. A ruinous acrid element taken into the system may induce, primarily, this atrophy of the kidneys; in such case both would be affected. Turpentine, juniper, savine and benzoin, when taken by mistake in greater than medicinal quantities, would tend to induce a condition of these organs tending to waste the albumen of the vital fluid. Rasped continuously with sharp granules of renal calculous concretions, is one of the causes of the destruction of the epithelial membranes of these urinary ducts. The inflammation thus induced in these ducts extends to the cortical portion, inducing congestion and albuminous effusion into the excretory ducts. Add the yellow hue to the skin, and you have evidence that the kidneys and liver are turning their glandular secretions through their emulgent veins into the circulation.

When the columnar bundles of ducts in the kidneys are thus obstructed with albumen, the urinary secretions overflow and are carried into the circulation by the emulgent veins. A difference of opinion exists in medical writers, in regard to the origin of urea. Some hold it to result from the worn debris of the system, and therefore is a constant element in the circulation. Others hold it to be a glandular secretion, and that it finds its way into the circulation, as above stated. When urea is turned into the circulation and phosphate or carbonate of lime exists therein, it unites therewith and forms lithic granules called uric acid, which plays a conspicuous part in the calcifereous, precipitates in the lungs and other parts of the system. Urea being a common element in the renal passages, no precipitates are formed with it, except these bases are secreted from the blood to be brought in contact with it. Consequently, when these basic elements are thus secreted, lithic granules are found in the pyramidal ducts to wound their epithelial membranes in their passage into the pelvis of the kidneys, and induce pyelitis or inflammation of the pelvis of the kidneys, and nephritic colic, when they obstruct the ureters in their passage into the bladder. When a nucleus is formed in the bladder too large to be voided, it augments into what is called a stone in the bladder. Were it the case that urea was a constant element in the circulation, disastrous results would follow the introduction of these basic elements into the system which would not be dissimilar to those obtained in the renal passages. Most of the kidney diseases of long standing are prevented from recuperating by a continued repetition of the cause that is referable to a calciferous element in the circulation that is imbibed in lime water.

ACUTE CYSTITIS,

OR INFLAMMATION OF THE URINARY BLADDER.

This disease may be known by pain in the urethra, and an uncomfortable sensation in the bladder upon slight distension, causing a desire to urinate at very short intervals, with scant passages of urine, and a painful sensation is experienced, for a few minutes after each passage.

The immediate cause is inflammation of the mucous membrane of the organ. The approximate cause is a lithic habit of the kidneys, wherein fine lithic sediment and acrid urine irritate this membrane. The remote cause is a habitual use of acids, such as vinegar and strong acidulous fruits, and the use of hard, limy water. The acute stage either terminates by resolution, or it degenerates into ulceration of the mucous membrane of the urinary bladder, and becomes chronic.

TREATMENT.

℞ Ex. Dandelion grs. 30, Nitrate of Potassa grs. 35, T. Opii gtt.35, Veratrum Globules (Homœopathic) 15, Gelatine ℥ i. Dissolve all in warm water ℥ iii, dose ʒ ij, give such a dose every 1½ hours until the inflammation subsides. Apply T. of Capsicum to the spine from the ribs to lower part once per day.

CHRONIC CYSTITIS.

This form of this disease results from the acute form, by reason of the perpetuation of the cause to prevent the recuperative efforts in the acute stage. The symptoms are similar to the acute form, only of less intensity, except in case of granulation of the membrane, wherein we find puriform passages in addition to the symptoms present in the acute form. The disposition of this membrane of the bladder to thicken is due to the elasticity of the organ. When this organ is empty, and in a complete state of contraction, it is very thick. When it becomes inflamed, it assumes this contracted state, by reason of its sensitiveness to expansion. The danger lies in the recuperative process being deferred until it granulates or forms a great number of little fistulous abscesses. When it degenerates into this state of ulceration, it renders the urine turbid and difficult to pass. Then the case becomes more severe, requiring the use of the catheter and sometimes the exhausting pump, to draw off the water.

TREATMENT.

℞ Solid extract Dandelion grs. 40, Solid extract Hyoscyamus grs. 25, Solid extract Licorice grs. 120, Fluid extract Queen of the Meadow ʒ 1. Dissolve the extracts in two ounces of warm decoction of hops, when cool mix and add Nitrate of Potassa 30 grains and sugar syrup one ounce, Give one teaspoonful every three hours.

When the water contains pus, use a decoction of Marsh Rosemary root pulverized ʒ 2, boil it fifteen minutes and make when strained off ℥ 2. Use one ʒ at first, and send it blood warm with a p p syringe into the bladder, and increase the enemas of it to three drachms. The strength of this decoction for the enema may be increased to twice the above strength with safety and benefit. Use this enema once per day until the patient recovers, or in case of severe granulation of the membranes, use an enema per urethra of a solution of Nitrate of Silver grs. 4, soft water ℥ 1, use per each enema ʒ i ss. Use such an enema every second day, alternating it each day with the decoction of Marsh Rosemary.

The bowels should be kept carefully open by the use of one-fourth grain Podophyllin sugar-coated pill taken at bed time, also at bedtime take three grains of Diaphoretic powder. Take such a dose often enough to keep the bowels from constipation. Apply the spinal liniment on the loins and sacrum once per day, and exclude from diet everything sour.

STRANGURY.

This is a complication of cystitis that prevents the discharge of the urine by preventing the usual effort. This stricture of the sphincter muscle of the urinary bladder retains the urine until its distension jeopardizes a fatal rupture of the organ. The severe pain this distension induces in this organ while in a state of inflammation frequently induces severe spasms of the most distressing character. The participation of the muscles in this pain becomes titanic, and an attempt to force a catheter past this strictured sphincter into the bladder, before the pain is subdued on which the stricture depends, must lacerate the membranes to accomplish it. The danger of rupturing the blood vessels in this forced effort is so great that no intelligent physician would hazard such an effort when he found this resistance to the passage of the catheter. This violence is not required, if the pain is subdued to relieve the stricture of this muscle before making a further attempt to pass the catheter. After this relief the catheter can be passed with the greatest ease. To secure the relaxation of this spasmodic stricture, give ex. hyoscyamus grs. 4. If this does not give the desired relief

in two hours, repeat the dose : also, at the same time, wring a towel out of hot water and lay over the part as hot as the patient can bear, changing them once in four or five minutes for a half hour. This must be treated more carefully than simple cystitis, by reason of the undue sensitiveness of these motor nerves involved, by sympathy to induce the stricture. To guard against a return of this dangerous symptom, the following prescription is advisable: ℞ Hyos. ex. grs. xxx ; ex. dandelion, grs. xxx ; fluid ex. burdock ℥j ; nitrate of potassa , grs. 40 ; tinc. wintergreen, ʒj ; tinc. sang. can., ʒij ; dissolve the extracts in hot water, ℥i ; when cool add all and simp. syr. ℥ij. Dose, ʒj ; give a dose every two hours for the first day, then in three hours. Also, use salicin grs. xx ; fluid ex. of rhubarb, ℥ss ; water, ℥ij ; tinc. wintergreen, ʒj. Dissolve the salicin in the water first, then add all, and it will be ready for use. Dose, one teaspoonful in four of sweetened water. Take such a dose every three hours during the day-time. Use this treatment until the patient passes water freely without the use of the catheter. Then, as the case is one of chronic cystitis, it should be cared for under that head. Avoid taking cold, use soft water, and reject everything sour from your food and drink.

MEMBRANES.

THEIR FUNCTIONS AND DERANGEMENTS.

The internal cardiac membranes, like those of the arteries, secrete a serous fluid for lubrication, and to dislodge any viscid substance inclined to adhere.

The serous membranes of the cavities, in a normal state, exhale the quantity of serum needed for lubrication, which is as constantly being taken up by the absorbents to prevent a dropsical accumulation. The quantity of this fluid needed is preserved by an equal balance of action maintained between the exhalents and the absorbents.

When the serous membranes are laboring under a state of congestion, they effuse an abnormal fluid containing phosphate of lime: a fluid that the absorbents can not command to remove; consequently it induces adhesion of the surfaces of the membranes in contact.

Congestion of serous membranes is mostly due to concretions that lie at the precise entrance of the nerve through the

inter-vertebral foramen, which interferes more or less with electric circulation. Altogether, I find the gravest cause of this paralysis due to deficient glandular depuration, inducing thereby phosphatic granulations of the membranes of the vertebral foramina.

Depending upon the secretory vessels of the membranous system for disposing of the impurities in the circulation during time of glandular incapacity, is one of the systemic alternatives to preserve life. In forcing this work upon these membranes is like putting great tasks upon feeble workmen. At this juncture, thickening of membranes and cartilaginous granulation obtains. This abnormal condition being referable to glandular obstruction, this feeble aid has to be depended upon while the biliary and renal organs are removing their concretions by the breaking down process. Success in this effort will depend upon the vis medicatrix naturæ to carry it safely through.

NERVE FUNCTIONS.

The nervous system holds the balances of the life-giving power, which is dispensed in force to suit the demands for recuperation in all its delinquent parts. In the work of constructing the nervous fibrillæ, the purer the elements furnished, the finer and nearer perfection will be these gossamer fibres; and in their degree of perfection will depend their genius for rendering perfect work in the temple of life. Life depends upon the ruling nervous supply of neurine to compose its structure.

An obstructed nerve disappoints the part of an element to combine with the arterial blood, congestion follows, and its pain calls for a rally of nervous force to resuscitate the delinquentnerve, or effusion must follow.

The fibrous portion of the dermoid tissue is made up of two systems of nerves, and becomes a garment composed of nerves and circulatory vessels.

DERMOID DEPURATION.

During the capillary arterial congestion from a congestive chill, the most fluid portion of the serum and the impurities therein contained detrimental to assimilation, escape through the distended walls into the cellular tissue of the dermoid membrane, to be finally disposed of during the colliquative perspiration. The three stages that constitute an exacerbation of an intermittent fever have a direct course given to pursue, in this work of relieving the circulation of unassimilative elements. The fever has a small part of the work assigned to it, in the extra nervous rally, to chemically dispose of the residuum left in the circulation.

ANASARCAL DROPSY.

In the dermoid tissue, we find the secretory vessels to be under the control of the functional nerves for freeing obnoxious elements from the circulation.

In case of dropsical accumulations, the fault must be referable to the inefficacy of the functional nervous support of the absorbents to secrete the fluid as fast as it is produced, which admits of an accumulation in quantity.

In a case of anasarcal dropsy, the question arises, "Why do not absorbents remove the fluid from the cellular tissue sufficiently rapid to prevent this dropsical accumulation?"

Between the functional nerves of the dermoid subcutaneous exhalents and those of the lymphatic absorbents, most probably the solution of the question may be found—excessive exhalation upon one hand and injured absorbents by the presence of an acrid fluid to paralyze the absorbents on the other hand, is my solution of this question.

HEPATITIS,

OR, INFLAMMATION OF THE LIVER.

There are two forms of this disease, the *acute* and the *chronic.*

The acute form may be known by the following diagnostic symptoms, viz : Pain in that portion of the liver where the inflammation is located, which, in the majority of cases, is in the right side, affecting the coronary portion of the right lobe. The liver is enlarged by congestion, causing a short, painful and hurried respiration. Each inspiration is terminated so abruptly as to give an explosive or grunting sound:—pulse quick, frequent and full, and a correspondingly high fever obtains. These febrile symptoms are preceded by rigors and retching to vomit, that appears to be quite obstinate. The urine is scant and high-colored.

The indications of cure are, to relieve the obstructions; to relieve the spinal congestion that obstructs the vital hepatic nerves; to stimulate the renal organs to perform their offices promptly; to support the general nervous system, and moderate the febrile symptoms.

Begin the treatment by giving an infusion of hops, q. s., a short time after which give a lobelia emetic. Or proceed as follows: Nitrate of potassa grs. 15, water ℥ iv. Give ʒ iv. every half-hour until it is all taken. Also give diaphoretic powders, grs. 3, every three hours until the fever subsides. After taking solution two hours, give three half-gr. sugar-coated podophyllin pills. After the liver is well cleaned, give a solution of salicin, 10 grs. in water, ℥ iv. Dose, one tablespoonful every two hours. Repeat the dose of pills if the liver does not open in fourteen hours. Follow the use of the salicin tonic until the patient feels quite well. The author has never known this course of treatment to fail in giving prompt relief.

CHRONIC HEPATITIS

May supervene from the *acute*, or it may arise from a spinal derangement that, by its congestion, interferes with the insolation of the vital nerves of the liver, reducing their ability to assimilate the arterial blood as rapidly as it is sent to it, thereby keeping it in a partially congested or tumid state.

Again, it may be and is frequently induced by the failure of the renal organs to properly depurate the circulation. The circulation being thus overcharged with impurities, which obstruct the biliary ducts with those sedimentary secretions that, if long retained, will result in the formation of hundreds of minute biliary concretions of the size of onion seeds. The author evacuated and preserved over five hundred of these calculi from the liver of a great sufferer from asthma for many years; and after expending a great sum to no avail in going the rounds in America and Europe, to find relief; after which the case was referred to the author for a thorough examination. These calculi were readily diagonised, and by treatment they were safely removed, after which recovery was rapid.

The instances of these biliary obstructions from calculi are more frequent than has been discovered by physicians. To test the diagnosis, the excrement was washed, and two ounces of these concretions were saved.

Albuminous and glutinous concretions are the elements that most frequently obstruct these ducts. This often induces febrile exacerbation of the type of remittens simplex, that wastes the system rapidly, and gives to the patient a very sallow appearance.

The treatment will necessarily be a gradual course to reclaim the activity of all the delinquent organs on which this derangement depends.

The renal organs and liver should be stimulated to a uniform state of competency. A course should be pursued to create more spinal energy and greater muscular power, for the

organs depend upon the systemic power for all of their functional ability; and consequently, by increasing systemic power, these organs respond to its energy. Man was designed for an artistic being. The range of the mechanical arts, requiring different degrees of muscular power, consequently God laid in the background muscular capacities for all, suited to meet the demands of each one's chosen occupation. Consequently, nothing can contribute so much to health as prudential muscular industry; while, on the other hand, nothing contributes more to enervate the system than idleness and inactivity. By inactivity the fluids of the system become stagnant, swampy and sour, losing its chemical ability to recuperate the systemic powers; then it passes rapidly into decline. Consequently, for persons to enjoy good health, they must claim their muscles as promptly as they would their baggage at a railroad station.

The following will make a good prescription for chronic inflammation of the liver :

℞ T. Sangcan, ʒ iv., f. ex. Wahoo, ℥ i., ex. Leon Tarax, gr. 20, T. Xanthox, ʒ iij., Jamaica Ginger, ʒ ss., made in decoction, ʒ iv., and add s. syrup to make ℥ iv. Dose, ʒ j. five times per day, or enough to secure one passage of the bowels per day. If the bowels become very much obstructed at such times, give podophyllin, gr. j. at bedtime, preceded by nitrate of potassa, in solution grs. 15, aqua q. s. Apply the spinal liniment once per day for one week; then apply the spinal plaster, and let it be on as long as it adheres well.

For a number of times podophyllin will have to be taken before the prescription will control the liver and bowels without its repetition.

Judgment is required in fixing the dose that shall be required by the temperament and constitution of the patient.

If the Wahoo shall be too driving for a weakly female, substitute for the Wahoo, S. Niter, ʒ ij., Veratrum Globules, 80, dissolved in the syrup, and give the podophyllin in gr. ss., mixed with Diaphoretic powder, gr. ij. for a dose, when needed to keep the liver and bowels open.

A dose of podophyllin once per week of two one-half grain sugar-coated pills will be a judicious way of keeping up the activity of the liver, preceded always by the use of a solution of Nitrate of Potassa, 10 to 15 grains, in half-tumbler full of cold water, to be taken in divided doses during the afternoon preceding the use of the liver pills at bedtime.

NEURALGIA.

Neuralgia is defined by Webster to be "an idiopathic pain of a nerve of sensation not occasioned by any other disease."

The general health is protected by the nerves of sensation. They furnish an alarm for every affected fibre in due time to save them from further injury. Were their language properly interpreted, and the abnormal conditions faithfully cared for, a higher standard of health would be maintained.

When the electric circuit of a nerve is continuous, no sensation is realized; it is health. Crude electric elements have their molecules transformed in the different ganglia into all the various molecular formulas needed to compose all the dissimilar parts of the system. All the delicate atoms are thus inspired to fill the offices assigned to them in the living temple.

Taking in all the broad range of elements, generally introduced into the system, it is under the necessity of selecting the congenial and disposing of the detrimental as best it can. The intemperate habits of a degenerate race must increase the systemic disability to do this work of culling and transforming for the systemic needs.

One of the causes of neuralgia is brought on by inactivity in the sitting posture for a long time, by exposure to cold currents of air, by keeping the form clothed in fabrics too compact for the escape of the gases exhaling from the system. Hardened fæces in the bowels are usually the cause of neuralgia in the head. Pain in the bowels is caused by distension from over-eating and gas; but these last are of but short duration.

Broken insulation of a nerve is the cause of pain in the various parts of the external skin, that induces inflammation and abscess. Cuticular diseases are but formal introductions to the elementary causes for bringing out the hidden mysteries of other abstruse diseases.

The antrum Highmorianum, being a large cavity in the cheek bone, the nerves of its interior periosteum are often painful. So likewise are those of the superciliary cavities.

Lost continuity in a nervous current leaves a breach that requires juxtaposition to renew the circuit. To this end the supurative process is resorted to by the system. Half of the above cases are proven to be derived from severe colds, and belong to coryzeal blennorrhœa, and many of the remainder are referable to mechanical disturbances rather than to any lesions.

The indications of cure are to engage in moderate exercise, to keep the bowels gently open, to vitalize the system with gentle tonics. Cheerful company will be exhilarating, and gentle sleep refreshing.

TREATMENT.

℞ Wahoo bark of the root, ℥iij; Holland gin, ℥iv; boil and strain off ℥viij; mix. Dose, one tablespoonful, or ʒij four times per day. Use veratrum globules xv when the pain is most acute, once per day; or, if after three hours the pain does not abate, repeat one more dose.

Also, when the antrum or the frontal sinuses are affected and painful, inhale the gas from the oil of peppermint. Use hyoscyamus and colocynth pills. ℞. Hyos. ex., grs. x; colocynth, grs. 50. Make ten pills. Take one every ten hours until the bowels are cleared. Then use one often enough to prevent constipation.

When the pain is very severe, take two grains of ex. of hyoscyamus every three hours until it subsides, after which a dose may be repeated only often enough to prevent its occurrence.

Use for a diuretic, as a steady drink: ℞. Crowd a teacup full of the petals of hops, fill the cup with boiling water, set it aside, and drink it in divided doses during the day. When the pain is internal and severe, foment the part, by applying to the part over the pain a towel wrung out of hot water as hot as can be borne, changing them every few minutes until the pain is relieved, or for fifteen or twenty minutes. If the case proves to be rather obstinate to the above treatment, give nitrate of potassa grs. 15, in solution of cold water ¼ pint. Dose, one tablespoonful overy ½ hour until it is all taken, and begin its use early enough to have it all taken before bed-time. Then take at bed-time two ½-grain sugar-coated podophyllin pills. After they open the liver the congestion which causes the pain will subside; then the symptoms will yield more readily to the use of the hyoscyamus or other anodynes. After opening the liver, give 4 grains of salicin four times per day, in water ½ oz.

IRRITABLE THROAT.

This is quite a common derangement, that usually arises from a weakness of the membranes, that has been induced by a series of colds, each of which induced more or less congestion of this glosso-pharyngeal nervous centre, that sends out the vital nerves that preside over the work of assimilation in

the membranes of the throat, or *fauces*. More than two-fifths of the brain derangements are caused by this congestion of the membranes of the fauces, that endangers the stricture of the recurrent nerves that pass from the superior cervical ganglia up through the carotid canal, to vitalize the membranes of the brane.

The damage incurred by this cause to the brain has contributed more to fill the lunatic asylums than that which has proceeded from mental perplexities.

When these nerves become partially obstructed, a corresponding low vitality of assimilation obtains in the organs of the brain, that leaves them in a state of congestion that renders the person irritable, peevish, fretful, and often so jealous of his best friends that it becomes very difficult to please him. Many insane cases of this kind can be rendered sane by treatment that will effectually cure this tendency to throat congestion. The danger of brain irritability from sore throat demands that prompt attention be given to this throat inflammation whenever it occurs.

Why this chronic sore throat is not necessarily more acute is, that the paralysis on which it depends is not continuous. When the febrile symptoms remit, the congestion subsides, and the stricture is relieved until the next exacerbation of the fever arises. This mechanical stricture of these recurrent cerebral vital nerves is therefore one of very common occurrence, and is the one most disastrous to the mental organs.

Chronic sore throats, when they do not induce decided insanity, they never fail to induce an irritable temper that is very trying to friends. It also causes great instability of mind in business.

To effect a cure of this chronic derangement is not the work of a day ; it involves too many consecutive causes that have to be looked after effectually before this can be permanently reached. It therefore can only be secured by successfully treating the tangible causes that lie in this portion of the spine and glandular system. Public speakers should give the vocal organs a long time of rest while these ends are being accomplished.

Treatment will necessarily have to be continued for a great length of time before this debilitated state of the membranes can be overcome sufficient to be secure against congestion from slight causes that stricture the roots of the inferior branch of the trigeminus, or fifth pair of nerves, that have to preside over the membranes of the throat and lingual organs.

The glandular obstructions that date back of this spinal derangement will require a great length of time before they can be made to properly depurate the impurities from the circula-

tion adequate to furnish aliment sufficiently pure to nourish these acutely organized nervous centres.

The symptoms of this disease are a dry throat, that tends to be sensitive to swallowing towards evening, a husky voice, especially after talking briskly. A dull, heavy pain is felt in the back brain, that is augmented by close mental application to deep subjects. The neck becomes easily paralyzed, so as to feel stiffened and lame upon moving the head. The bowels become constipated, and the food does not digest well; and severe paralysis is endangered in the back brain, neck and upper part of the chest, by sleeping too deeply and too long. When pain is experienced in the back brain, it is followed by a husky voice that proceeds from more congestion in these membranes. Treatment: ℞ t. sang. can., ʒiij; f. ex. wahoo, f. ℥j; wintergreen, t., ʒiij; seneca snake root, ʒiv; add s. syrup to make ℥iij. Dose, ʒss. four times per day. When the head begins to become painful, take hyos. ex., gr. j. every two hours until it subsides. Also, at the same time, give colocynth gr. v. every eight hours until it operates to clear the bowels, as a cathartic.

If the patient shall also be dyspeptic, the dyspeptic treatment should be resorted to.

To take a dose of the pulmonary balsam every time the throat became dry, or voice husky, will give present relief to speakers, and tend to relieve the local congestion. But to relieve the perpetuating cause, the kidneys and liver must be kept gently open.

THE DUODENUM,

As its name imports, is twelve fingers' breadth in length. It begins at the pyloric orifice, and is continuous with the jejunum. The duodenum receives the bile and pancreatic juice in a mixed state.

Were it not for some guardian solvent to keep the circulating elements in a fluid state, the vessels would become obstructed; therefore, in looking for this solvent, we find the bile and pancreatic juice being secreted by the two largest glands in the system, and being mixed together before they enter the duodenum; and these secretions being delivered at an ostensible point where they can mix with every particle of chyle that

traverses every vessel in the system, to combine with albuminous and gelatinous concretions to resolve them into a fluid state. Some physiologists hold the peristaltic motion of the bowels, claims one or both of these agents to preside over it.

If these two secretions have not separate offices assigned to them, they would not have need of separate organs to produce them. The only object for the union of the excretory ducts of these two glands before entering the duodenum appears to be the use of the gall bladder, in common as a reservoir in times when the duodenum passage becomes obstructed. In cases of yellow jaundice, this reservoir and the biliary ducts become filled, after which the bile is compelled to overflow into the venous circulation.

The peristaltic motion of the bowels is perfectly dependent upon a stimulant to carry forward the chyle and compress the villi. (See peristaltic motion.)

Separate offices are evidently assigned to the secretions of these two organs, for when either one is suppressed by disease or augmented by medicaments their separate offices are then manifest by the abnormal condition induced.

The functional nerves of the duodenal mucous membranes have more offices to subserve than merely to receive these secretions and the chyme and mix them for the chyle. They are endowed with the fine sensibility for comprehending the chemical quality of these biliary and pancreatic secretions, so that when they become dangerously depraved in quality, by impurities secreted from the circulation, this membrane becomes excited thereby, and closes these ducts against its farther transmission to mix with the chyle, for the time being, as a safeguard to the farther injuries the system might sustain from it.

It also has to determine the quality of the aliment sent to it. It therefore ejects by enemas whatsoever it judges to be injurious to be sent into the circulation. But when the pylorus and duodenum have had their fine sensibilities violated and rendered obtuse by the intemperate use of poisonous beverages, they lose their ability to guard as well the health of the person and keep the chyle as pure as these guardian genii were ordained to in their pristine temperate state.

Where this is the case, chyme that has undergone vinous fermentation in the stomach, is allowed to be passed into the circulation to damage the brain and great nervous centers on which the organs depend for vitality and functional power.

The instinctive laws that protect the animal from the use of improper articles of food, protect man. Offensive odor, disgusting taste, nausea and vomiting ensue when certain improper elements have been taken. An unintentional error in diet is corrected by emesis when these organs are in a state of integrity.

The oftener this fine duodenal sense is violated, the more incompetent it will become to comprehend the qualities of the obnoxious elements that may be sent to it. The way to save this duodenal faculty from incompetency, is to heed the admonitions of the olfactory and gustatory senses. These premonitory senses have not been so carefully instituted and located by Divine wisdom without their indispensable importance. By them ten thousands of dangers are warded off to save the physical temple from premature dissolution.

Every case of the overflow of bile into the circulation is not induced by an obstruction of the choleduct passage into the duodenum. Concretions formed in the capillary ducts will turn the bile into the circulation. We are enabled to distinguish between the two cases. The latter always has its symptomatic pain deep seated in the left hypochondriac region, between the lobes of the liver. The fibrous membranes being congested by the same cause, induce this pain.

THE PYLORUS.

The pylorus is a guardian organ placed between the stomach and duodenum, in order to prevent any substance from passing from the former until it is prepared to be acted upon by the latter; and so faithfully does this guardian perform this office, that it will retain in the stomach all the aliment until it is duly chymified, but readily allows the chyme to pass into the duodenum as fast as it becomes thus duly prepared for the process of chylification in the duodenum and its circulating vessels. But, on the other hand, when food is taken into the stomach in so crude or unmasticated a state as to undergo a fermentation before it can be reduced to chyme, it will eject it to save the system from the damage that might occur from it.

As soon as the pylorus begins to deal out the prepared chyme to the duodenum, a similar process to that of the pylorus takes place in the biliary and duodenal passage, of dealing out small quantities of bile and pancreatic juice in a mixed state to mix with the chyme and prepare it into chyle for circulation, which is carried forward as rapidly as it is received.

THE MUCOUS MEMBRANE OF THE INTESTINAL CANAL.

On the surface of the mucous membranes of the small intestines are found a great number of papillary projections springing from the dermis of these membranes. In the small intestines they are so elongated and prominent as to resemble the pile on a piece of velvet, and have been called *villi*. The lacteals or capillary chyle ducts arise in these villi. The spongy texture of these villi, by their capillary attraction, absorb the chyle, and by their great elasticity the chyle is forced into their ducts, by the pressure of the contraction of the peristaltic wave as it passes over them in the work of carrying the chyle forward.

The chyle is then impelled forward by the diastolic force of the right ventricle of the heart, precisely after the mode of that which pertains to the venous circulation.

The mesentery is expressly organized for, and admirably constructed in form with its immense convoluted capillary surface, to gather up the chyle; and its radii of ducts conveying to its center by the union with larger ones, that empty the chyle into the thoracic duct, completes the arrangement.

DUODENITIS.

The duodenum is subject to become inflamed by impurities secreted from the circulation, and by poisonous articles taken into the stomach. It has to do the work of ejecting every poisonous substance sent to it, to prevent them from being carried into the circulation. Pungent matter is frequently sent into it from the liver, by which its mucous membranes become congested, inflamed, and its functional nerves paralyzed. The peristaltic motion becomes suspended thereby. The chyme then is not forwarded before it undergoes a kind of vinous fermentation very damaging to the system.

Inconsiderate persons often bring on an inflammation of this organ by gormandizing, or by crowding down their food in a half-masticated state. It will then require less time with the invalid for it to acidify than to break it down into chyme. This is the most frequent cause of duodenal inflammation.

Such indifference to health appears surprising to physicians and persons familiar with the laws of health; for tormenting sick headache and neuralgia follow close in the wake of this sour chyle, when it is carried into the circulation. It irritates and more or less inflames all the vessels through which it passes. Many of the organic diseases are referable to this primary cause, such as chronic inflammation of the kidneys and great spinal nervous centers, on which the functional power of the organs depend. Then follows that torpor of the vital organs that causes general debility. When the systemic powers have been thus supplanted, the sum of these derangements is called *Dyspepsia.* General debility in this case, centers its cause in this loss of chyle, and the mischief it does in this acidified state to the fine structure of the system.

Persons in robust health can not realize the importance of being so careful of how and what they eat; but the sufferer will readily comprehend their importance.

The poison secreted by the liver from the circulation, with the bile, inflames the mucous membranes of the duodenum more frequently than has hitherto been supposed. When this is the case, the congestion of the duodenal membranes closes the biliary passage into the duodenum. This induces Yellow Jaundice, when the liver is very active. A long continuation of this obstruction tends to culminate in ASCITES, or abdominal dropsy, by the encroachment of the distended biliary ducts upon the portal circulation. The diseases in which duodenal incapacity is a prominent cause, are Renal, Spinal and Liver obstruction, constipation of the Bowels, Cystitis, Diabetes and Neuralgias. These causes have made more invalids than can be charged to hard labor. Intemperance in the use of alcoholic beverages is one of the most prolific causes of duodenal incapacity. Thousands annually descend to untimely graves by reason of its habitual use. The whole moral and intellectual man becomes depraved by it, while it is slowly but surely consuming the physical temple. Such depraved minds become incompetent guardians of the rising generation under their charge, and mental incapacity and pauperism follow in its wake.

The practice of using acids is a very common source of Dyspepsia, by reason of the damage they do to the duodenum. Acids, when taken, are subject to ferment the chyme. Then, what is not ejected by vomiting, is sent in the form of sour chyle into the circulation, to inflame the vessels through which it passes, and obstruct nutrition. In dyspeptic cases, about one in four have lost their health by the use of sour bread and pickles. If these faultily prepared articles of diet can be obviated, common judgment ought to be good for obviating the balance of these infringements upon health.

In these injurious beverages and acidulous articles of diet, lies the danger of losing the power of *perfect digestion*, which must precede imperfect chylosis. Seasonable financiering, to provide wholesome and properly prepared articles of diet, will serve to ward off no small share of a dyspeptic's fate.

The fine sensibility of the mucous membranes of the alimentary canal to the presence of an acid, in youngerly persons of sound health, will impinge and contract the mouths of the capillary chyliferous ducts to prevent the acidified chyme from being taken into the circulation, and by the hurried peristaltic motion it induces, it is rapidly carried through the bowels in the form of a diarrhœa, which, when intensely urgent, is called *Cholera Morbus.* But when the fine sensibility of these membranes becomes obtuse by age or constitutional debility, the sour chyme will pass into the chyliferous circulation, to the damage of the system, as above elucidated.

TREATMENT FOR CHRONIC DUODENITIS.

℞ S. Niter, ʒ iv., or Nitrate of Potassa, grs. 15; T. Caraway, ʒ ij.; Hyoscyamus Ex., gr. xx; Leontedon Tarax, gr. xx; simple syrup, ℥ j. Dissolve the extracts in hot water, ℥ j., and when cool mix. Dose, ʒ j. Give four doses per day, one-half hour after each meal, and at bedtime. Also give Colocynth, gr. v., once per day in the morning. Then, if the bowels do not move by bedtime, take another dose, the design being to secure only one movement of the bowels per day.

To treat this duodenal inflammation successfully, it requires much care in diet for a great length of time. Judgment is required in selecting food slow to acidify, and to prepare it with that care necessary to speedy chymification, that it may pass the pylorus before it has time to acidify.

Gentle labor in the open air (that does not much increase the rapidity of the circulation,) sufficient to keep up the powers of the nervous system, facilitates digestion and a more active assimilation.

INFLAMMATION OF THE PYLORUS.

The damage that the system sustains by an acute or chronic inflammation of this organ, will be apparent when we remem-

ber that its office is to prevent any food from passing into the duodenum in an unchymified state. It also serves to forward the perfected chyme sufficiently gradual to allow time for its being forwarded by the peristaltic motion, so that when the chyme becomes exhausted in the stomach, it has all been carried into the chyliferous circulation, which thereby gives all of the organs of the digestive apparatus time for a recuperative rest. When the pylorus is rendered unusually sensitive by acute inflammation, it will not allow the chyme to pass, but will retain it in the stomach until it degenerates into an acid; then, by its pungency, it will irritate the stomach and cause its ejection by emesis.

The chronic debility that follows an acute inflammation of this organ, which is called a chronic inflammation, ranks nearer with that of partial paralysis than an inflammation. This faculty is thereby rendered so obtuse as to disqualify it for preventing the passage of the aliment in an unchymified state into the duodenum. When this is the case, if the food is not thoroughly masticated or taken in a state of chyme, it will tend to obstruct the small intestines, and induce a severe determination to the brain until it is removed. I will here remark that I have not unfrequently found physicians treating patients in this case for inflammation of the brain.

SYMPTOMS.

When the pylorus is acutely inflamed, a pain will be located at or near the lower point of the sternum, and a little to the right of it. The chyme sours, and it is ejected by vomiting. In such case it contains no bile, except the vomiting be long continued. The use of poisonous beverages and over-eating is the most common cause of pyloric inflammation. When more food is taken than is needed to supply the demand of the system, the balance will be retained in the stomach. The chyliferous vessels being filled, there will be no further call for it to be sent forward. The residuum remains in the stomach to acidify and inflame its mucous membranes, which is called *Gastritis* by authors. But as the most mischievous point in gastric inflammation lies in the pyloric derangements, I prefer to call it pyloric inflammation.

The indications of cure are : To relieve the irritability of the gastric mucous membranes; to support the nervous system, and secure a regular action of the glandular system.

TREATMENT.

Apply a mustard paste upon the epigastric region, (or at the pit of the stomach,) once per day, to induce a nervous rally in the vicinity of the inflamed part. In this case of pyloric ob-

struction, the therapeutical indications must be fulfilled by the use of medicated enemas per ano. The kidneys must be stimulated by a solution of Nitrate of Potassa, gr. xv. Water, ℥ iij.; use it tepid all at once ; use such an enema twice in the twenty-four hours. To open the liver, add podophyllin three-fourths of a grain, cut in alcohol ʒss, to one of the enemas, but not oftener than seven days apart. Take into the stomach a decoction made of marsh rosemary root ʒiij, in decoction ℥iv. Dose, ʒj every half-hour for four hours. Then take a dose once per hour until the gastric inflammation subsides. To support the nervous system under the febrile action, give aconite globules, xv, every hour for iv. doses, or until the fever begins to abate. To tone up the nervous system under relaxation, after the determination to the brain and fever have subsided, give a solution of salicin, gr. x.; nitrate of potassa, gr. x.; water, ℥iij. Dose, ʒiv every two hours. Keep up an action in the spinal nerves by an application of a stimulating liniment once per day. If the patient is restless and wakeful, give cholera infantum powders, gr. vj, every two hours until sleep is effected. The diseases wherein pyloric inflammation becomes the most dangerously obstinate, are scarletina and diphtheria.

ENDO-ENTERITIS,

OR INFLAMMATION OF THE MUCOUS MEMBRANES OF THE SMALL INTESTINES.

At the pyloric orifice is the beginning of the duodenum, which is continuous with the jejunum and ileum, which continuously compose the small intestines. The mucous membranes of the whole intestinal canal officiate in absorbing the chyle. The mucous exhalents compose small elevated tubercles called the glands of *Peyer* and *Brunner*.

When these membranes become inflamed, these mucous exhalents become obstructed. Then the membranes are deprived of this lubricating fluid, which causes intense thirst, that demands frequent draughts of water to overcome.

In making up a diagnosis of this case, the excessive thirst, obtuseness of pain, the absence of exquisite tenderness to pressure, and the hurried peristaltic motion of the bowels, will determine it from inflammation of the peritoneal coat.

Nature has been ever merciful in all the derangements to save unnecessary pain. Therefore, in this case, there is not much pain induced by the presence of fluids, or by the pressure of the peristaltic motion upon them.

The solvent process is the one pursued in the stomach and intestinal canal for preparing the aliment for chyliferous absorption. Therefore, caloric and electricity are the qualified agents assigned to this work. To make the greatest amount of chyle out of the food, every process in digestion should be correctly executed. Selecting, preparing and masticating the food are under the dicta of the judgment. The balance of the process is governed by systemic law. So nature handles as best it can what the judgment sends to it. The dangers of introducing aliment in a state impossible to be converted into chyle are these: If the food is retained in the stomach too long, it will undergo fermentation. This acid inflames the mucous membranes; the sour chyle inflames the lungs in its transit through them, and when it is carried into the arterial circulation it inflames the kidneys and obstructs nutrition, and induces capillary obstruction and arterial plethora throughout the system. But its mischief is most severely felt in chronically debilitated organs, or parts.

In this recapitulation of the damage the system sustains by defective chylosis, the source of the following diseases is rendered apparent, viz: Simple bilious remittent fever, neuralgia, rheumatism, and the first departure of organic disease of the lungs and heart.

This chyliferous apparatus is not designed to fulfil the duties of the culinary art, nor to make chyle out of unmasticated food. Therefore, if these improper duties are forced upon it, it will become diseased under the effort. There is more to be gained by observing the laws of instinct, which are provided with more than human wisdom to save the person from the injuries of an improper diet, than to take the chances of eating what these senses condemn.

The design of turning this article into a gossip about indigestion is to direct the mind to the many causes of this disease. Perfect financial care in this department for securing longevity is of the first importance.

In treating cases of chronic endo-enteritis, if these laws of dietetics are not properly observed, it will be in vain to attempt to perfect a cure with remedial agents alone. Lost vitality is a thing not easily regained; it will require the aid of every accessible means that contributes to sustain it in times of health; therefore I have thus directed the mind to these surrounding aspects.

I will give in this place a prescription for the acute form only,

as the treatment for the chronic form will be found under the head of chronic southern diarrhœa.

First, give a good diuretic to depurate the circulation, to suspend the perpetuating cause. ℞ Xanthoxilum Bark of the Root ℨ iv, Cinnamon Pulvis ℨ j, Tincture Opii m. xxx, Sumach Bark of the Root ℨ ij.

Make a decoction of these barks f ℥ iij, add the tincture of Opii. Dose ℨj, every half-hour until the diarrhœa begins to abate; then begin to lessen the frequency of the doses, or use the following: ℞ Fluid Extract of Xanthoxilum ℥ j, Tincture Opii m. xx, Tincture Peppermint ℨ ss, Tincture Camphor m. x, Tannin grs. ij. Mix and add Simple Syrup ℥ j. Dose f. ℨj every fifteen, twenty or thirty minutes, according with the urgency of the case, until relief is obtained.

INFLAMMATION OF THE CÆCUM.

This organ is located in the right iliac fossa. The inflammation of the mucous membrane of this organ may be determined from that of the peritoneal by the obtuse pain under pressure, and the frequency of the passages of the bowels; whereas, in peritonitis it is tumid and exceedingly painful under pressure, and the bowels are unusually constipated.

The danger in the case lies in the suppuration of the ilio-cæcal valves, that are designed to prevent the return of the fæcal matter into the ileum. It is also subject to gangrenous perforation of the bowels.

Sibella formed in the ileum so large and hard as to overdistend this passage, is one cause of this inflammation; another is metalic substances accumulating in the appendix vermiformis; but the most usual cause is the accumulation of concrete fæcal matter in the organ. The diarrhœa therefore present in the case, is but augmented secretions designed to solve and dislodge these offending substances. If they are not soon dislodged, these secretions soon make a dangerous draft upon the serum of the blood, as is the case in Asiatic cholera and cholera morbus. The indications of cure are to quiet the irritability of the nervous system, and to arrest the diarrhœa; and if the case shows undue obstinacy, suspicion may be entertained of foreign substances being in the appendix vermi-

formis. In this case it will be well to invert the patient for a few moments in an attempt to dislodge them by their gravity. When hardened fæces are suspected as being the cause, they may be dislodged by the use of refined olive oil ʒiv, every four hours for three doses. When the obstructions are removed, to check the diarrhœa, give the following: ℞ Xanthox. t., ʒiij; nitrate of potassa, gr. xx; salicin, gr. x; t. opii, m. xx; t. tolu m. xv; t. carraway, ʒj. Dissolve the salicin and nitrate of potassa in water ℥v, mix. Dose, ʒj, in two of water; give such a dose every two, three, or four hours, as the emergency of the case seems to indicate. If the case proves obstinate, give oxide of bismuth gr. x, once in four hours for two or three hours.

DYSENTERY,

OR, INFLAMMATION OF THE MUCOUS MEMBRANES OF THE COLON AND RECTUM.

This disease may be readily known by the frequent painful and small passages of bloody mucus.

When this disease occurs epidemically, it must necessarily be derived from a cause foreign to that which may be chargeable to the use of any ordinary food taken. Yet unripe, acidulous fruits no doubt are pernicious agents in hastening or augmenting the morbid condition affecting persons in times of this epidemic. Persons of delicate health, and those who greatly violate the laws of health, are the first to fall a prey to all malarious diseases.

This epidemical cause is derived from some local miasma that affects the atmosphere in certain districts, the inhalation of which deranges the nervous system and induces partial paralysis of the vital nerves of these membranes, and congestion and inflammation results.

The acridity of the secretions in the inflamed colon inflame the rectum, and bring on the painful tenesmus, which causes the disposition to strain to free the rectum of these poisonous secretions that are irritating it. The congestion of the rectum is augmented by this straining to the extent of sanguineous effusion.

Dysentery is very seldom a disease of the rectum alone; it is usually consecutive upon this colonic inflammation, and not

unfrequently involves the ileum. When the inflammation extends up the ileum, it may be known by the small, compact circular wads of mucus that become streaked with blood while passing through the rectum.

The danger in the case lies in the *straining*, that carries the congestion to that paralyzed state of the mucous membranes of the rectum, that results in their gangrenous sloughing to carry off the patient. Consequently, it is of the first importance in the treatment of this disease to arrest the tenesmus and the straining as early as possible, to prevent the congestion from being carried to this dangerous extent. The indications of cure are: to rally the vital nervous action to the inflamed parts, to terminate the mucous colonic blennorrhœa that keeps up the diarrhœa and tenesmal inflammation in the rectum, and to prevent the tenesmal tormina and straining; also, to ensure the purity of the circulation by increasing the action of the depurative organs

Treatment. To effect the nervous rally to the inflamed parts, apply a large mustard paste over the whole abdomen. To relieve the diarrhœa, give the cholera infantum powders gr. vj, every two hours until it begins to subside; then the time may be extended between the doses, yet they should be given often enough to control this symptom. To allay the excitement and congestion in the rectum, give an enema per ano. ℞ t. opii. m. x; marsh rosemary, strong decoc., f℥ij; and in one hour and a quarter give: ℞ t. Xanthox, m. xv; t. opii., m. x; t. capsicum, m. x; olive oil, ℨss; thin sol. of starch, ℨij; mix. Make one enema, and repeat it as often as the tenesmus returns. Also, ℞ Hyos. ex., gr. x; leontedon tarax ex., gr. x; nitrate of potassa, gr. xv; s. syrup, ℥ss; t. podophyllin, m. xx. Dissolve the extracts in water f℥j, and mix all together. Dose, fℨv. Repeat the dose every two hours until the patient is convalescent.

The enemas should be administered very gently. Great care should be used in inserting the tube of the syringe into the inflamed rectum. The tube should be small and two inches long. The patient should dispense with drinking fluids as much as possible, and by all means abstain from the use of acidulous drinks.

Toast water makes a very good drink in this case. The patient should keep a recumbent position until the tenesmus subsides, and keep quiet for some time. The diet should be soda cracker toast, or something easily chymified.

HEMORRHOIDS, OR PILES.

Hemorrhoids are divided into *internal* and *external*, according to their situation, either above the sphincter muscle, and in the inferior part of the rectum, or below the sphincter, near the verge of the anus, under the delicately thin integuments by which this part is covered. But as the *internal* pile may protrude below the external sphincter, the best criterion is its texture, for it is always covered by the mucous membrane of the bowels; while an external pile is invested by the delicate skin near the anus. Those internal ones, which resemble *varices*, lie under the mucous membrane, which is often adherent to their surface, and so thin that their bluish color can be plainly distinguished through it.

Internal hemorrhoids, of the spongy and cellular kinds, are always situated between the fleshy fibres and the mucous coat of the bowel under which they project. They are of different sizes, from that of a pea to that of a walnut, or even a small egg; but occasionally there are so many that the affected part of the bowel is filled and distended with them. Sometimes only a small portion of them project into the bowel, the greater part of their mass being lodged in its cellular tissue. External hemorrhoids of this kind also sometimes form slight prominences under the delicate skin near the anus; but in other examples form considerable and permanent tumors.

The primary cause of both internal and external piles is due to an obstruction in the portal circulation. When these vessels are thus weakened, the size of the piles are often augmented, and even hemorrhage induced by heavy lifting.

The tumors are induced by the plethora of the portal sinus setting back upon the capillary veins of the rectum that arise in the dermoid tissue of the mucous membrane, which enlarge by the frequent repetition of this congestive cause, until the dermoid tissue becomes ruptured; then the mucous coat easily distends before the pressure of portal congestion, and thus form the pile tumors, which are frequently ruptured by the straining used in passing hardened fæces, causing the hemorrhagical flux. When this congestion becomes chronic, a morbid thickening of the membranes of the rectum obtains, and often a constricted state of the anus, and great induration of the adjoining cellular tissue. Piles which have been repeatedly inflamed occasionally spasmodically stricture the sphincter, rendering the passages of the bowels exceedingly painful.

Lastly, abcesses and fistulæ may become complications of hemorrhoidal swellings. Inflamed piles occasionally suppurate in their centres, and the puriform matter which forms within them flows continuous from small fistulous canals.

INFLAMMATION AND STRANGULATION OF PILES.

Another inconvenience from piles, and in some cases not less serious than that resulting from their magnitude, or the bleeding from them, is their *inflammation*, which, in its very beginning, is usually subjoined with a protrusion, either of the hemorrhoidal swellings, or of a circular prominence of the rectum in a state of great turgescence. Nothing can exceed the sensitiveness which these parts acquire from distension and the pressure made on their base by the sphincter muscle. Violent nervous symptoms, extreme restlessness, severe febrile disturbance, and even subsultustendinum, may arise from the inflamed and strangulated state of hemorrhoidal swellings.

Here the first indication is to push up the tumors completely beyond the grasp of the sphincter muscle. The patient is directed to rest on his knees and elbows, and the swellings, having been smeared with a little spermaceti ointment, are to be gradually pushed up by one of the surgeon's fingers, with the intervention of a fine napkin. Then, in order to prevent the protrusion from taking place again, a compress is to be made of fine-cut tobacco encased in fine muslin and moistened and applied to the anus, and supported by the T bandage, and the patient is requested to keep quiet for some time.

Treatment. For internal piles use per ano: ℞ t. capsicum ʒss, to ʒj if it is not full strength; t. opii, ʒss; oil olives, ʒj; mix. Use it by wetting a little probang with it and insert it deep enough to stimulate the internal membrane of the rectum. Use it thus four times per day.

To relieve the hepatic obstruction that induces the portal plethora and constipation of the bowels, give podophyllin ¼ gr. every second night until the bowels become free enough. Also, take a solution of nitrate of potassa gr. x, in water ℥iv. Dose, ʒiv every hour and a half. Take such a solution every day, while taking the podophyllin every night.

When a tobacco fomentation is applied to inflamed piles, it should be removed if it inclines the patient to vomit. However, it seldom produces any nausea until after it has quieted the pain and sufficiently relaxed the tumidity of the parts.

In chronic cases of puriform discharges, use small enemas of a decoction of marsh rosemary twice per day.

INFLAMMATION OF THE PERITONEAL MEMBRANE OF THE INTESTINES

Is of very rare occurence, except when induced by some mechanical injury. In such cases the nature of the injury will indicate the external treatment needed. Rest and quietude; fomentations applied over the bowels, etc. The pain should be relieved by giving diaphoretic powders, gr. iij, every two hours until the pain subsides. Also, give the following: ℞ tincture of camphor, m. xv; dandelion ex., gr. x; belladonna ex., gr. ¼. Dissolve the extracts in hot water ʒij, and add s. syrup to make ℥j; mix. Dose, ʒss every hour. As the bowels are always constipated in this case, to disturb them with laxatives or solid food will be liable to augment the pain and inflammation to a dangerous extent. No laxatives should be given, nor should the food be heavier than that of some kind of gruel.

But little more aid can be rendered in this case than has been thus advised, while nature is taking the necessary time to perfect its recuperative processes.

HECTIC FEVER.

When this fever is silently making its effort in harmony with the systemic forces, it always evinces that purulent matter is being taken into the circulation, and also that the system is making a critical effort to repair abscess. This effort will depend for its success upon four conditions important to the physician as his allies: First, nervous energy to circumscribe as narrow matrix bounds for the abcess, or part to be removed, as possible. Second, proper glandular action to render the blood as pure as nature requires to succeed in a first effort. Third, a moderate motion of the heart to prevent further congestion, and Fourthly, pure air.

Authors have contended that abscesses are one of the efforts of nature to depurate impurities from the circulation as an alternative when the renal organs fail to properly perform this functional work. Hence, the common remark that boils are healthy efforts to take impurities from the system, etc. The absurdity of this idea will be apparent when viewed in the

light of the physiological and pathological laws laid down in this work. All abscesses are an effort to dislodge some foreign substance accumulated in the capillary arteries, which is unassimilative, or which has been thrust into the part. In doing this it only seeks to remove the morbid matter within the confines of its own instituted *Herverion walls*, and by this precautionarily instituted process to repair the breach again. This work of removing foreign bodies from the system is one of the most interesting phenomenal processes that is brought within the observation of the physiologist and pathologist. In this process the first phenomenal work is to create a hard point in the centre, around which the ulcer first assumes a separatix line, at which the capillary nerves and circulatory vessels are terminated. This boundary forms the abscess matrix. The second work is to seal the capillary arteries, and provide the secretory apparatus, called the abscess *matrix*, which performs the office of secreting from these vessels the plastic lymph to fill the abscess, in which the new vessels are relaid after the pus and foreign substance have been removed. This work always begins by turning off the vital support from the part designed to be broken down for removal, and in which is contained the foreign body. When this foreign body is retained in the abscess after the pus has been removed, it will continue to be a source of irritation, that will continue to waste the plastic lymph by keeping open the abscess, and a fistulous opening will result. When the offending agent is readily expelled with the gangrenous pus, the next work is to seal the pointing aperture, to preserve the plastic lymph, in which the work is immediately instituted to resurrect the lost part. The system is so rapidly changing, the supply is needed instant and constant. Unless this demand is thus supplied, the part has to fall back upon this recuperative alternative for renewed vitality. Were it not for these provisional means to conserve the system, our destruction would follow the slightest obstruction ; there being no separatix, gangrene would be universal. But, as it is, we have only day after day to furnish the needed demands of the system for food, drink and warmth. Pure air is abundant, as is also light in its proper time. Hurried breathing does great injury to the lungs when the person is affected with either phthisis pulmonalis or lung fever. Surely the one measure of air does more good when deliberately inhaled and exhaled than when used in a too hurried succession. Care should be used to breathe slowly and quite full, as a general rule, as a person inclines to while sleeping, and the patient should go out in the open air as much as possible in pleasant weather.

The oftener the vessels are worked, the greater the exhaustion; consequently, this hurried respiration should be avoided by

doing everything coolly and deliberately. This will elevate better the tone of the vital powers needed for mending the damaged parts, and carry off the debris. Care should be used to prevent any purulent matter from closing the bronchia, lest it should induce the abscess to point in another direction, and form a new opening. This would alter the effort used to throw out plastic lymph to fill the abscess to that of clearing it, besides having two openings to seal in the place of one. Careful nourishment is indispensable in this pulmonary derangement. By conforming to these precautionary measures, it is difficult to conceive why the systemic efforts may not terminate lung abscess as favorably as those in other parts of the system.

INFLAMMATORY FEVER.

This fever is due to a local inflammation, the intensity of which depends upon the part of the system affected, and the density of the tissue involved; it being more intense when located in the serous membranes of the great splanchnic cavities, as the pleura and peritoneum. It excites the circulation much less when located in the extremities or dermoid tissue. When the inflammation involves the dense parts first mentioned, the fever is ushered in by a chill, that is followed by a high fever and a bounding pulse. When the invading symptoms have subsided, the fever will tend to abate and allow the patient some rest during its remission. Great care should be used to not disturb the composure so much needed for the successful work of recuperation, for it is in the hours of sleep that the Hippocratic medicatrix-naturæ is enabled to obtain the systemic reins that govern the recuperative powers. By allowing the patient to sleep too deeply, will carry the case beyond recuperative control, and endanger a species of paralysis or coma, difficult to overcome. Consequently, care should be used to secure superficial gentle sleep, to obtain the amount of recuperative aid designed in it. The first efforts of nature are the most valid and successfully directed, for it has more power at its command. To compromise these first efforts in any way is to lessen the chances of recovery. Consequently, great care should be used to prevent the occurrence of any disturbance in the vicinity of the patient under such circumstances, but rather strive to render any rational aid nature requires to make a success in first efforts.

Not unfrequently in these cases much valuable time is lost by deferring recuperative action by such disturbances, and the want of timely aid. When the system has made the best effort it can under such unfavorable circumstances, if the patient survives, it may leave a troublesome inflammation to disturb the system continuously for some time. In making the exam-

ination from whence to make up the diagnosis of the case, the locality of the inflammation may be readily ascertained ; first, by the throbbing sensation felt by the patient in the part, which is caused by the force of the heart against the stagnant blood in the capillaries of the congested part ; secondly, by the sensitiveness of the part under gentle pressure, and lastly, the acute pain of a more advanced stage is sufficient evidence.

It is more generally the case that the inflammation is a secondary one, and the cause should be looked for in congestion of the periosteum of the inter-vertebral foramina that strictures the vital nerves that leads to the secondarily inflamed part. This spinal congestion may be due to an impure circulation, or, which is most common, to undue exposure to cold a sufficient length of time to carry the congestion of the spinal membranes to an extent that carries some of its fluids through the walls of the circulating vessels, that cannot be reclaimed by getting comfortably warm again. The diagnosis should carefully settle all of these points, in order to correctly direct the treatment.

The indications of cure are, to correct the habits of the glandular system ; to support the nervous system, and to aid the systemic rally to the inflamed parts, which can be effected by the application of a mustard paste, or hot water fomentations, and followed by a warm flax-seed poultice. If the case terminates in a superficial abscess, it then comes under the head of topical surgery. (See Abscess).

BILIOUS FEVER.

The term *bilious* is appended to this type of fever to direct the mind to the pathological condition the liver is forced to assume to protect the chyliferous apparatus against the poisonous effects of the impurities in the circulation that induce this fever.

This type of fever is one of the most frequent occurrence in places free from malarial inundations.

This fever is mostly due to the use of food that ferments and sours the chyme, and disqualifies it for healthy blood. The nervous system is rendered sensitive by this *acetous acid* in the circulation, and the renal organs become inflamed and obstructed thereby, while depurating it from the circulation.

When the renal organs become thus obstructed, a portion of the urine secreted overflows into the circulation. This urea and acetous acid, when secreted by the liver from the circulation, irritates the duodenum, and as soon as the duodenal membranes begin to suffer from its poisonous effects, the biliary excretory ducts, which are ever in sympathy with the duodenal mucous membranes, are rendered sensitive to its presence, and thereby become congested, and their passage into the duodenum closed. Thus the systemic powers turn off these poisonous biliary secretions from the intestinal canal into the venous circulation.

These unassimilative elements in the circulation, and the injury the nervous system sustains thereby, culminate a stasis in nutrition that brings on a chill, more or less intense, that reacts in a fever,

This fever is not ushered in with a decided chill, like that of an intermittent, but a vague chill, that feels like cold water trickling down the back, and alternated with flashes of heat, until the fever is completely established. During these rigors of cold and flashes of heat, great pain is experienced in the head. The kidneys and loins are painful, and the urine scant and high-colored; the tongue is dry, and furred with a yellowish sord; the patient is thirsty, and much oppression is experienced in the vicinity of the liver, pancreas and spleen, which are tumid with congestion; the pulse is frequent and small during the rigors, and frequent and full during the fever, and the respirations are hurried, which is mostly caused by the tumidity of the liver, that encroaches upon the lungs, and only allows them to partially fill.

A remission of the fever takes place at three or four o'clock in the morning, and allows the patient two or three hours of repose. This remission sometimes takes place twice in the 24 hours—morning and evening. This fever generally yields to correct treatment in from two to five days.

The indications of cure are, first, to depurate the circulation by proper diuretics; to abate the fever and relieve the cerebral congestion by anodynes and diaphoretics; to help terminate the spinal congestion by the use of a good spinal liniment, and to gently open the liver after the renal organs have had ample time to clear the circulation of these impurities so dangerous to the duodenal and intestinal membranes. This is a very safe way of treating all fevers: To first depurate the circulation of the impurities that prevent nutrition, by administering a suitable diuretic to clear the renal obstructions and keep up diuresis for twelve hours. To fulfill this indication, put 20 grs. of nitrate of potassa into a half-pint tumbler half-full of cold water; give two teaspoonsful every twenty minutes until it is

all taken. Also, if there is much distress in the kidneys, use a decoction of hops, made by filling a teacup of hops and pour it full of boiling hot water; let it cool and strain off as it is wanted for use. Give two teaspoonsful every hour. After using these diuretics three hours, give to an adult three half-grain sugar-coated podophyllin pills, to open the liver and operate as a cathartic in 12 or 14 hours. In case the pills should not operate in 24 hours, repeat the dose. If there is much determination to the brain, with headache, give a three-grain diaphoretic powder every three hours until it subsides. Also, give 10 globules of aconite (homœopathic) every hour for three doses. After the bowels have been well opened, begin the use of a salicin solution by putting 15 grains into a half-tumbler of cold water, and add 10 grains of nitrate of potassa. Dose, two teaspoonsful every hour; or, in place of the salicin tonic, use sweet spirits of nitre 2 ounces, and 20 grains of quinine dissolved in it. Dose, one teaspoonful in four tablespoonsful of cold water. Give such a dose every two hours until the patient is fully recovered. Use the spinal liniment along the whole length of the spine once per day, to overcome, as speedily as possible, its congested membranes. The diet should be gruel as long as the fever continues, after which it may gradually become more liberal. Care should be used to secure a continuous action of the kidneys, or the liver will become obstructed again. All of the glandular organs should be kept in general action, and when they need no further aid, the treatment may be considered ended.

INTERMITTENT FEVER.

This fever is one of most common occurrence on the great western prairies, while the soil is first being broken in new settlements. It no doubt is derived from the carbonic acid contained in the upturned vegetable mould, where it has been accumulating for ages, from its annual precipitation from a redundant accumulation of carbureted hydrogen in the atmosphere, above its demand for the support of vegetation. By its combination with the oxygen of the atmosphere, it is precipitated, and a large portion of it enters into chemical combination with the vegetable mould, as a means of its conservation in position, as a capital for the vegetable kingdom to draw upon

for support in the warm season. This upturned mould, becoming saturated with water and exposed to the evaporating powers of the sun, the hydrogen set free enters into combination with the acid in proportion to constitute it a gas as light as the atmospheric air, into which it rises and commingles. This hydrated carbonic acid gas becomes fused and precipitated, after its demand for vegetation is checked, by a succession of frosts. When this work of precipitation is transpiring, and the atmosphere is sufficiently saturated with this element, it is manifest in the luminous burning clouds in autumn nights, the phenomenon of which has been called *aurora autumnale.*

After a few years of cultivation of such rich soils, this excess of carbonic acid, detrimental to health, becomes exhausted; after which this fever seldom occurs upon the upland prairies. Hence, the common remark derived from observation, "that our western prairie country becomes very healthy as soon as the districts have been generally plowed, and the excess of carbonic acid becomes bleached out of the soil." But the low, untillable, alluvial bottom-lands in a hot climate are not thus reclaimable from occasional excessive malarial exhalation, to render this congestive type of fever epidemical in widely extended plains.

It has for a long time been conceded by all eminent physicians that this intermittent type of congestive fever was of malarial origin, but they have not so well agreed upon the definite element that comprises this malaria, nor the mode of its action upon the system by which the pathological conditions are induced that culminates a paroxysm of this fever.

The order of the procedure of this disease is as follows: As the fault or primary cause is found in this impoverished state of the atmosphere, the first departure will be found in the defective primates chemically elaborated at the air cells in the lungs. First, the substitution of carbonic acid gas for that of oxygen gas, would serve to lessen the force of combustion and prevent the depuration from the blood an amount of carbonic acid equivalent to that contained in the air cells. Secondly, the hæmatine primates become deficient in chemical quality and quantity. Third, the quantity of nervous electricity generated becomes deficient in quantity and quality of its primates; and Fourthly, a deficient quantity of caloric is evolved; all of these four conditions being unfavorable to the maintenance of healthy nutrition. With an accumulation of this acid in the circulation, nutrition becomes more defective with a corresponding decline of systemic vigor. The membranes of the excretory ducts of the renal organs become irritated by the acridity of this acid in the urine, causing congestion and an albuminous effusion that obstructs the passage of urine in some

of these ducts, which, as the circulating blood becomes more depraved, this renal congestion and obstruction of ducts becomes more general, causing an overflow of urea into the circulating blood through the renal emulgent veins. With this additional acid in the circulation, another derangement obtains, which is a closure of the biliary passage into the duodenum, to protect the intestinal membranes from its inflaming effects. With the failure of the kidneys and the closure of the pancreas and liver as depurating channels, the systemic powers become directed to the perspiratory apparatus for a grand flooding depuration of these dilute acids from the circulation. This systemic effort is achieved in the three stages of an intermittent paroxysm : the chill, the fever and the colliquative perspiration, which are carried safely through by a grand systemic nervous rally by alternate means for such cases made and provided. (See Systemic Nervous Rally in this work.) The malarial cause and glandular obstructions being unchanged, a paroxysm in its various types will culminate in the following time viz : In the quotidian in 24 hours, in the tertian in 48 hours, and in the quartan in 72 hours. When the nervous and glandular systems improve, the *paroxysms* postpone, when they become more obstructed, it anticipates. By reason of it requiring more time to fill the circulation with these impurities adequate to induce a chill in some types than others, explains all there is in these types. The indications of cure are to overcome the glandular obstruction and give them proper support in the work of depurating the excess of carbonic acid accumulating in the blood, and to give a proper support to the nervous system by the use of well-selected tonics.

Treatment. During the chill, if convenient, put the patient in bed and apply hot applications to the extremities and spine, and allow the patient frequent but small draughts of cold water. When the chill is on, administer a five-grain dose of diaphoretic powder. When the chill begins to subside, remove the hot applications, and as the fever begins to rise, gradually lay off the bed clothes as they become uncomfortable. The febrile symptoms, when they run high, should be moderated by sponging the patient over with moderately cool soft water. The use of diaphoretic powders in three (3) grain doses every two hours after the first five-grain dose is given, from the time the chill begins until the fever begins to subside, will shorten the time of the chill and the fever. Directly after the colliquative sweat has subsided, is the best time to begin the treatment for the glandular obstruction, leaving the tonic to be introduced directly after the liver is opened. No tonic is admissible under glandular obstruction. ℞ Nitrate of potassa 20 grains, put into a half-pint tumbler full of cold water ; give a table spoon-

ful every fifteen minutes until it is all taken. This will clear the albumen from the ducts of the kidneys and support the kidneys in depurating all the impurities from the circulating blood before the liver is opened; then the liver will have pure blood to secrete its bile from to pass harmlessly through the bowels, and afterwards be able to support digestion. After giving the solution of the nitrate of potassa three hours, give from two to four half-grain sugar-coated pills of podophyllin, according with the age and constitution of the patient. These pills will open the liver passage gently and without nausea, in 14 hours. Then begin the use of the following tonic: ℞ sweet spirits of niter, (army strength), 4 ounces; quinine 40 grains; shake and it well be all cut and dissolved by the s. s. of nitre. Dose, 1½ ʒ diluted in one oz. cold water. Give such a dose every two hours the first 24 hours, then if no chill occurs, give a dose every 2½ hours during the day time, up to 9 P. M.; then after that give a dose every three hours during the day time, until the strength of the patient is fully recovered. Also, as soon as the bowels need more action, give a small dose of the podophyllin pills. The use of one teaspoonful dose of this tonic diluted, taken morning and evening, and gently keeping the liver open by these sugar-coated podophyllin pills, will prevent this fever. This treatment has proved successful in every case in my practice for over 30 years, and will ever succeed whenever proper judgment is used to administer a proper quantity of the remedy to fulfil these indications with the robust constitution and the child. In every order of fever, I immediately, before giving a dose of podophyllin, begin the use of the following solution: Nitrate of potassa, grains 15 to 20, put into a half-pint tumbler, half-full of cold water. Take one-fourth of this solution at one dose before taking the podophyllin; then take 4 drachms every half-hour until it is all taken. The objects to be gained from the use of this solution are to clear the renal excretory ducts of their albuminous obstructions, and assist in the depurative work of clearing the circulation of all impurities before the liver is opened. By this precaution the secreted bile will be pure to aid the digestion and chylosis. Without the use of this precautionary measure, the danger to be apprehended from forcing the liver to secrete these acids from the blood is in forcing an action which the systemic powers have taken the precaution to guard against by closing the duodenal passage to protect the intestinal membranes from the irritating and inflammatory effects of these acids, holding that it is better that the liver secrete no bile from the portal blood than to induce endo-enteritis by its continuance under such unfavorable circumstances, and depend on the routine of an intermittent febrile exacerbation for relief.

NOTE.

The exposition of the systemic laws manifest in this paroxysmal effort to resuscitate nutrition, not only elucidates the functional work of the vital nervous system in presiding over nutritive assimilation, but it manifests the power of the spleen and supra renal capsules over the nervous system whenever suspending assimilation and arterial plethora begin to endanger life, and in it is clearly manifest the object of these systemic efforts in the various types of fever. The odor of urine in the colliquative perspiration evinces one object gained in the exacerbation, being the depuration from the circulation through the perspiratory vessels of the skin, the urine accumulated in the circulation by reason of renal obstruction. Another valid point, no doubt, is gained in this perspiratory work, which is the flooding out of liquid dilute carbonic acid that fails to be depurated by the lungs when an equal quantity of the acid in a gaseous form is being inhaled with the atmospheric air. These two points being gained, nutrition is resumed for a time, to become gradually more defective until the accumulation of these two acids in the circulation brings on another exacerbative effort to expel them from the circulation.

TYPHOID FEVER,

OR, ENDO-ENTERITIS.

This fever has been one of the surest destroyers of humanity that physicians have had to contend with.

The success that attends the author's practice in fever is dependent upon the care use to depurate the circulation of the impurities on which the fever depends, before giving a biliary cathartic to remove the guard placed in the liver gate by the systemic powers, to protect the chyliferous apparatus against this poisonous element. If I am called to a case of fever that is free from a diarrhœa, by this caution I prevent its occurrence. I also find but a limited number of cases of fever that, in the early stages, have this diarrhœa on which this type is based: all which, if carefully and properly treated, will terminate favorably. Consequently, a very great majority of the cases of this type are induced by the use of biliary cathartics before taking the precautionary measure to first stimulate the renal organs,

which are the designed depurative operatives to clear the circulation of its greater shares of impurities. After the circulation is thus improved, and the cause thereby that closed the liver being removed, the liver will respond to a very gentle purgative, and its secretions will be prepared to aid digestion by their purity, instead of inflaming the intestinal canal.

To begin the treatment by prescribing first a bilious cathartic, is a very dangerous course to institute in taking up any case of fever. This liver gate should not be thus ruthlessly forced open, nor until the dangers are removed that the systemic powers closed it against, for nothing could prove more fatal to the case than to compel the liver to depurate the circulation of this destructive element, and send it forward to inflame the mucous membranes of the intestinal canal. Judgment should be used to protect this chyliferous apparatus in the treatment of all fevers, for when it becomes inflamed it closes one of the gates of life, and it too frequently proves an obstinate derangement that fails to recuperate in time to supply the exhausted circulation before the stock of adeps in the system is consumed, and life thereby rendered extinct. As all inflamed mucous membranes recuperate by forming new ones, the danger in the case lies in this recuperation being deferred by the continuous presence of the irritating cause. When the biliary secretions become sufficiently pure, these membranes will recuperate under rational treatment rapidly, if the mesenteric glands are not already in a state of ulceration. If this be the case, the danger is augmented by a farther postponement of chylosis, by the time required for these glands to recuperate. Since this fever always has this chronic diarrhœa connected with it, the indications of cure are, to remove the impurities from the circulation by the use of proper diuretics; to suspend the perpetuating cause of the diarrhœa and nervous prostration; to properly tone up the nervous system, and to secure quietude and sleep; and to use such internal remedies as are calculated to facilitate the speedy termination of the inflammation of the mucous membranes of the bowels by contact.

TREATMENT.

Nitrate of potassa grs. xv., in solution of aqua ℥iij. Give ʒiv every half-hour.

Aconite globules, 10 every half hour for three hours.

Xanthoxilum t. ℥iij. Give ½-ʒ in aqua ʒij every hour.

Salicin grs. x, t. juniper m. xv, spirits of camphor m. x, aqua ʒv; mix. Give ʒj in two drachms of gum arabic mucilage every three hours.

Marsh rosemary root ʒiij; make in decoction f. ℥vj. Give ʒj every hour.

If the patient does not sleep well nights, give cholera infantum powders grs. v, at bed-time, and repeat the dose every two hours until sleep is effected.

The use of gruel enemas are well calculated to prolong the life of the patient, when the resources of adeps are not likely to hold out during the time required for the recuperation of these mucous membranes, sufficient for the resumption of chyliferous absorption.

Use the spinal liniment on the whole length of the spine every morning.

This prescription has always proved sufficiently efficacious in my practice, and it should be followed per day until the patient is convalescent. Use the diet recommended for chronic southern diarrhœa.

When the passages contain bile, the liver is considered sufficiently open, and generally too active, by reason of the nervous excitability sent to the liver by the splenic rally. The above treatment is not only satisfactorily efficacious in endo-enteritis, but it is admirably adapted to relieve the febrile condition, with which it is connected in such cases.

TYPHUS FEVER.

This is a very contagious fever, and its propagation is dependent upon the inhalation of the malaria exhaled by a person who is afflicted with this fever. Consequently, the spread of this fever follows the direct line of its contagion. Doubts have been entertained in regard to its contagious character, by reason of its being confounded with other non-contagious continued fevers, such as the malarial, congestive, remittent, and the typhoid.

I will endeavor to give the leading characteristic features of these fevers, with a design to prevent the exposure of the populace from this typhus type of fever through such mistakes.

The circumstances under which this type of fever occur may aid the physician in determining the character of the type. First, its following the line of contagion; secondly, its occurrence out of a malarial district, or out of its season, and not being endemical; the surrounding circumstances of exposure, such as on ship-board, in the army or hospital, or having mingled with sea-faring emigrants. The circumstances that

evince a case of malarial congestive remittent fever are, the locality and season for its recurrence, it being endemical, and the absence of the evidence of it being imported; and, lastly, a knowledge of its sporadic occurrence very well settles its non-contagious character.

In the malarial congestive remittent fever, the only observable, distinguishable symptoms of that of the typhus are: The exacerbations and remissions are more observably marked; the febrile action is more intense, inducing more determination to the brain, and the remissions are of longer duration. The nervous derangement is not as uniformly continuous, nor muscular prostration as rapid. Enough of the malarial periodicity of its character is observable to mark alternate worse and better days, and it is found to yield more readily to the use of malarial antidotes than the contagious typhus. The confounding of typhoid fever with that of typhus, has grown out of the absurdity of allowing endo-enteritis to give the typhoid type to any fever under which the patient may be laboring at the time of its occurrence. For experience has taught me that endo-enteritis is a lesion that by erroneous treatment can be, and not unfrequently is, induced in all the different types of fever. It is a very dangerous lesion to be induced in any form of fever, but more particularly so in the graver types. But endo-enteritis renders a type of fever neither more nor less contagious. Therefore, my nosology excludes the term *typhoid* from the fevers, and considers endo-enteritis as a lesion that is not dependent upon any particular type of fever.

Celebrated authors have confounded the malarial congestive remittent fever with the contagious typhus. Beyond doubt there is much sameness in a majority of the symptoms present in these two types of fever; but upon closer scrutiny all the above-mentioned distinguishing characteristics belonging to these separate types of fever will be observable, and enable the physician to correctly distinguish them.

The importance of correctly diagnosing this contagious type of fever, magnifies with the responsible duty of the physician to guard the public against the spread of its destructive contagion, as well as for correct treatment. Not a shade of doubt can be entertained of the contagious character of this fever, in my mind, and this opinion is strengthened by such eminent minds as have been considered competent to take charge of the public hospitals, and who, by their statistics, confirm its strictly contagious character.

Laws of quarantine have been instituted as safe-guards against the introduction and spread of contagious diseases through large maritime cities, and hospitals have been expressly built to relieve vessels in quarantine. By this sanitary arrangement,

a large per cent. of the population of these cities is saved annually. Other sanitary measures are also important to confine it to those who are afflicted with it, such as warding it off in hospitals, or secluding all but the attendants from the sick-chamber, and the use of disinfectant fumigations in the sick-room.

DIAGNOSIS.

The leading characteristic symptoms of this disease are: Great nervous prostration and rapid muscular debility; the pungent heat of the skin, and torpidity of the bowels; the listlessness to what is transpiring; the great tendency to coma; the extreme thirst; the parched tongue, and the dark sords that accumulate on the tongue, teeth, gums and lips, and the extreme prostration to which it generally reduces the patient before convalescence commences, together with the peculiar cadaverous fetor of the exhalations from the patient. The premonitory symptoms are not dissimilar from those of other continued fevers. The determination to the brain and the splenic pain are more uniform and less severe than in the congestive remittent.

TREATMENT.

℞ Nitre grs. xv, fluid extract of Wahoo ʒiij, Tinct, Sang. can. ʒss., mix. Dose ʒj in Aqua ʒiij, and repeat the dose every two hours.

This prescription is designed to relieve the determination to the brain; to act as a diuretic; to stimulate the tonsillary glands, and gently open the liver after about twelve hours. At all events the prescription should be followed until the liver is opened. If the Wahoo cannot be obtained, use in its place ¾ grains of podophyllin cut in alcohol ʒss, diluted with milk. After the bowels are thus properly moved, give a dose once in six hours, or regulate it so as to move the bowels once in twenty-four hours.

After the liver is opened, commence the use of the following:

℞ Quinine grs. ij, Tinct. Tanzy ℥ss, Muriatic acid m. ij, then add simple syrup ℥iijss. Dose ¾ ʒ five times in twenty-four hours, and repeat it each day until the patient is convalescent. If there shall be too much determination to the brain, omit the Quinine tonic and give the following in its place:

℞ Opii m. x, Nitrate of Potassa grs. xv, Tinct. of Sang. can. m. xv, Mountain Mint herb ʒiv, made in decoction ℥ij, mix. Dose ʒiv every hour. Also give Diaphoretic powder grs. ij, every three hours; to relieve the brain and induce gentle diaphoresis. Apply a stimulating liniment to the spine once per day.

If symptons of qualmishness are present, give a solution of Salt grs. x, in cold Aqua f. ℥iij. Dose ʒiv, every twenty minutes until it subsides, if it is not disagreeable. The tonic here advised may be substituted by the one recommended in intermittent fever.

One principle should govern the treatment in all fevers, viz: to restore the lost action of the glandular system; to protect the brain, and support the nervous system.

REGIMEN.

The room should be carefully ventilated, so as not to expose the patient to a current of air. Disinfectant fumigations should be used sufficient to keep the atmosphere of the room as pure as possible. This will militate favorably to the recovery of the patient, and serve to prevent the physician and nurse against its contagion.

The patient may be allowed to drink in moderate draughts of cold water sufficiently often to quench the thirst.

The diet should be of arrow root or corn starch gruel, or toast water, until the fever subsides. After which beef tea or a broth made from mutton or wild game can be used, excluding chicken broth, for it will greatly endanger a relapse of the fever. A more liberal diet can be allowed as the strength of the patient improves.

PREVENTION.

The indications for a preventive are the use of remedies that will keep up the activity of the depurating organs, and thereby prevent any glandular obstructions. The incubative effects of this contagion upon the system tends to first obstruct the kidneys and liver, before the disease culminates the fever, and if this impression is promptly met by keeping the blood pure by keeping up a full action of the kidneys, and a gentle action of the liver, and at the same time giving the nervous system a little support, the systemic powers will triumph over any contagion.

℞ Sweet Spirits of Nitre f. ℥ij, Quinine grs. xx, mix. Dose ʒj, in four table spoonsful of cold water. Take such a dose three times per day; also keep the liver gently open by the use of one or two half-grain sugar-coated podophyllin pills once per week. The use of such a preventive by all persons exposed to typhus, typhus icterodes, scarlatina, spotted fever, diphtheria, and thereby the contagion will terminate with the affected cases. The author has thus terminated these maladies by the use of this prophylactic.

YELLOW FEVER

OR TYPHUS ICTERODES.

This fever is more prevalent in the tropics than in a climate of a higher latitude. When it occurs north of the equator, it has been observed to be imported in vessels that have made the long voyage to the East Indies and back. I regard it of a typhus type that is propagated in the time when the transit of the tropics are being passed, after making the long voyage to India, and thus far on the return voyage. The heat being so intense under a vertical sun, tends to prostrate the nervous system that has been already debilitated by so long a voyage, in vessels that have not been kept in such order as the laws of health demand. The query is, Why is it not then in all respects similar to the ship typhus fever that occurs on board of emigrant ships of the North Atlantic? The difference consists in this: The weather-bound time under the tropical sun is much more destructive to the nervous system than when it occurs in so high a latitude as that of the North Atlantic.

When under the equatorial sun, it drives all below hatch in a calm to seek shelter from the burning sun. The glandular system having become debilitated by loss of nervous support, the liver becomes obstructed and inflamed by this depressing cause, which is greater than this cool climate can induce; and, with a bracing atmosphere, the difference must be necessarily equally great.

In a Northern latitude, the liver is paralyzed, and its secretions suspended; while, under the great heat of a tropical sun, its secretions are unduly augmented, making the skin yellow with the bilious overflow into the circulation. This is the reason why it is called yellow fever. It is also substantially the same fever modified by these two opposite influences of a hot and a temperate climate; being equally contagious, but in no respect infectious, except by inoculation. During the blockade in the great Southern rebellion no cases of yellow fever occurred during that time, either in Mobile, New Orleans or Galveston; but as soon as the blockade was raised and East India vessels began to make these ports, the yellow fever was imported, and it raged with great severity in Mobile, New Orleans, and some of the ports in Texas. If this fever had made its appearance during the time of this two years blockade of our Southern ports, it would be strong evidence of its local propagation.

But the evidence points directly to that of importation from a Southern latitude. Therefore the best measures that can be taken to prevent its appearance in our Southern seaport cities, is that of strict quarantine upon East Indian and tropical vessels.

The difference between typhus and typhus icterodes is this: the surface is dark in the first, and yellow in the latter. This overflow of bile is caused by congestion and obstruction of the coleduct passage into the duodenum by the peculiar effects of this icterodes malaria and urea combined. While it stimulates the liver to undue activity in the secretory apparatus, all this impure bilious secretion is sent into the venous circulation, to saturate the membranes with its yellow pigment, and to prostrate the nervous system with this human malarial poison.

The accumalation of bile in the biliary ducts obstructs the portal circulation; that induces congestion and inflammation of the liver that terminates in gangrene of that viscus. This is what causes the black vomit which is indicative of a speedy dissolution. The systemic prostration is very rapid towards dissolution, after the coledoct passage and portal circulation are obstructed. In many cases, persons who are very much exposed to this fever escape its contagion, while persons who are affected with glandular derangements fall an easy prey to it. During the rages of this fever, the nurses should use the following prophylactic:

℞ Nitrate of Potassa grs. 60, Wintergreen t. ℥ix. First dissolve the Nitre in Aqua ℥ij, then add the tincture of Wintergreen. Dose ʒi, in five of water every two hours during the twenty-four hours on duty. This will support the kidneys and nervous circulation, and thereby prevent the disease.

SYMPTOMS.

The yellow fever is usually ushered in with lassitude and weariness, chilly fits, listlessness of everything around, faintness, giddiness, flushing of the face, redness of the eyes, pains in the eye-balls and lower part of the forehead, as likewise in the back; debility and sighing; thirst, and a tendency to lethargy; the urine is high-colored, small in quantity, and turbid; the perspiration is irregular, interrupted, and greatly diminished; the saliva is viscid; the tongue is covered over with a dark fur; the bile, which is scalding and acrid, is secreted in unusual quantities, and is thrown into the duodenum, from whence it is speedily ejected, and the skin is intensely hot, dry and hard. As the disease continues to advance, and the coleduct passage becomes obstructed, the eyes become of a deep yellow; the face and breast are tinged with the same hue; an incessant retching and vomiting of frothy mucus ensues; great costiveness prevails, which is attended with a permanent dilatation of the pupils of the eyes.

There is seldom an evident remission until the fever has entirely gone through its first stage, which is generally in thirty-six or forty-eight hours, when there is often such an abatement of the

symptoms as to induce the patient to think himself tolerably well; but an early recurrence of the symptoms, in an aggravated form, accompanied with extreme debility, soon convinces him of the contrary. In the last stage of the disease, the greatest debility prevails, and symptoms of universal putrefaction arise; large patches of livid spots are to be observed on different parts; the tongue becomes dry and black; the teeth are incrusted with a dark fur; the breath is highly offensive; the whole body exhibits a livid yellow, in many cases, but not in all; hemorrhages break forth from the mouth, ears and nostrils; dark and fetid stools are discharged; hiccoughs; the pulse sinks, and death follows very quickly. These are the usual symptoms, but there is considerable variation.

The following is an article written by the author in 1878, for publication in the Janesville *Recorder*, copies of which were sent to the boards of health in Memphis, New Orleans, and other cities where this fever was prevailing:

"Yellow fever, in its origin, has invariably been traced to our homeward-bound ships around the Horn, through the hot, tropical clime, the first exciting cause of which is the stench of sour, filthy bilge water in the holds of ships. The second cause is long confinement below deck, to escape the tropical heat of the sun when the vessels are becalmed. The inhalation of the noxious gas arising from the bilge water has its malarious effect upon the system, while the inhalation of the human effluvia has its typhus effects. The first inflames the excretory ducts of the kidneys, causing uric acid to be turned into the circulating blood through the emulgent veins. When the blood is thus rendered too impure for assimilation, a chill sets in. The second cause impoverishes the neurine carried by the nerves of nutrition to the termina of the capillary arteries, for combination with the red globules of the blood in the work of nutrition. These two combined causes being detrimental to nutrition, induce the sudden debility and marked nervous prostration of the patient, which gives the typhus type to the fever; and the exhalations of the decomposing elements of the system by the lungs, render the disease contagious only when the putrid fetid breath is present. The acrid renal secretions, turned back into the circulation, being secreted from the blood with the bile, render the bile so acrid as to irritate, congest and close the biliary passage into the duodenum. The accumulating bile crowding every duct to its fullest capacity, to distension, causes the redundant secreted bile to be turned into the circulation, giving the yellow color to the skin, which might properly be termed the yellow jaundice part of the case. All the venous blood that accumulates in the abdominal

viscera returns through the liver ; this circulation is only impelled by the force of respiration upon the abdominal viscera ; consequently, the distended bile ducts encroach upon these channels of hepatic circulation to an alarming extent. Hence, in consecutive order, we find from an overflow of renal secretions into the circulation this duodenal obstruction that pens up the bile to its overflow into the circulating blood, and with the great distension of the liver, an unusually distended fullness of every vein in the abdomen, causing the short, hurried respiration of the patient.

"THE BLACK VOMIT.

"When the bile is thus pent up for a short time, it becomes dark-colored. When the duodenal obstruction subsides, vomiting is induced by the great quantity of acrid bile being forced into the duodenum. In proof of the point claimed for the black material vomited being the pent-up bile, I here offer a case in point which occurred in my practice in the city of Madison in 1863. The patient was a Mr. Oakly. The case was one of yellow jaundice. After having taken the precaution to relieve the renal obstructions, then to overcome the duodenal obstruction, I gave an emetic, which resulted in filling a vessel two-thirds full of a dark brown thick matter that gas would collect in bubbles upon and break, which in color was similar to the black vomited matter in cases of yellow fever. Mr. Oakly very soon regained his usual health.

"The contagious character of this fever is limited to persons only whose renal organs are suffering from the effects of malaria. This fever would be more properly denominated a malarial typhus fever, or typhus gravior of ancient writers, for the reason that its spread is limited to a low country, and in a latitude where the heat of the atmosphere is sufficiently intense to stimulate the generation of an undue quantity of carbureted hydrogen gas from the carbonic acid contained in the soil of the low alluvial bottom lands. The fever generated in emigrant ships while crossing the Northern Atlantic, is of a pure typhus type, and not very contagious in a cool climate except in filthy districts in crowded cities, and even in that case the robust in health escape. The yellow fever becomes epidemical only when and where the people are being prostrated with severe malarial congestive fevers, many cases of which, no doubt, are too hastily pronounced yellow fever, not having the prostration of the typhus type of the fever present, very soon convalesce.

The indications of cure in cases of yellow fever are : First, to relieve the obstructed renal organs, and to give them adequate support in their official depurative work of keeping the blood pure. Secondly, to overcome the duodenal obstruction,

and thereby to relieve the congested state of the liver. Thirdly, as soon as the liver is relieved, to tone up the prostrated nervous system; also, to resort to the use of diaphoretics to restore the action of the membranous system, and thereby to secure a gentle perspiration continuously, which serves to abate the fever and lessen the frequency of the pulse and give the patient rest. The course of treatment should be well-timed, and in order with the routine of the abnormal pathological conditions to be overcome in the case. To begin the treatment by giving medicine to force the closed duodenal biliary passage before clearing the obstructed kidneys, would be fraught with great danger of inducing a fatal inflammation of the alimentary canal.

"Let us take a friendly review of the treatment most commonly used in the south for this disease. First, a dose of calomel, of twenty or more grains, is prescribed, and followed by from one to four ounces of castor oil. If the liver is not opened in twelve hours, the same doses are repeated. The castor oil is prescribed to protect the bowels from a fatal diarrhœa, that might result from the passage of the acrid bile when the liver should be opened. Let us see about driving the liver to secrete an undue quantity of bile while the cyst and biliary ducts are already crowded to overflowing. Under such treatment, the patient assumes more of a yellow hue, and the oppression is increased, while the patient becomes more restless. The castor oil, in large doses, will severely obstruct the kidneys of a robust well man, consequently, its use under such obstruction renders the obstruction more permanent. The liver being forced open under this renal obstruction, all the impurities of the system must be sent through the alimentary canal to fatally inflame it, and cut off all hopes of recovery. The treatment most advisable, and one that would seldom fail in skillful hands, is as follows:

"First, begin the treatment to open the kidneys by the use of pure nitrate of potassa, from twenty to forty grains, in solution in one-half pint of cold water. This solution should be given in one ounce doses every thirty minutes. (The number of grains used must be determined by the urgency of the case). At the same time, while using this diuretic solution, a decoction of mountain mint should be freely drank; also, give five-grain doses every three hours of Beech's Diaphoretic Powders. After properly securing a good opening of the kidneys, proceed to open the duodenal passage to the liver with a prompt emetic. After the liver is thus properly opened, give ten grains of salicin in solution every two hours until a less quantity will suffice to keep up the tone of the nervous system. Gentle diphoresis and prompt diureses should be constantly maintained

until the patient is convalescent. The liver will need no more urging. It will keep gently open if the renal organs are faithfully doing their work of depurating all the impurities from the circulation. It is best, after the kidneys are freely opened, to principally depend upon the mountain mint, or some diuretic more stimulating than the nitrate of potassa.

"All epidemical malarial fevers have been observed to subside as soon as the atmosphere became cool enough to check the elimination of this malarious gas, which has for its legitimate office the support of the vegetable kingdom, which gas is not obnoxious to health only when it becomes too redundant. Yellow fever also abates with the chill of the atmosphere.

"PREVENTIVE.

"The daily use oi a solution of ten grains of pure nitrate of potassa, and ten grains of salicin, put in a half-pint of cold water, to be taken at three doses, morning, noon and night, say before each of the three daily meals. Another—Sweet spirits of niter, army strength, four ounces; quinine, forty grains; put the quinine into the spirits of niter; in a few minutes it will be dissolved and be ready for use. Dose, two teaspoonfuls put into two ounces of cold water. Take such a dose three times per day. The use of either of these prescriptions will circumvent the occurrence of yellow, or any contagious or malarial fever with any person who shall be using it."

YELLOW AND BLACK JAUNDICE.

These diseases derive their names from the color they induce in the complexion. The first gives it an orange yellow color that first appears in the sclerotic coat of the eye, soon after which it is diffused through the whole cuticle.

The latter gives the complexion a dingy brown hue, that is not uniform but appears in patches, mostly on the forehead. It also colors, more or less, the whole skin where it is exposed to the light.

The yellow jaundice is caused by the liver being too much excited when the coledoct passage into the duodenum is inflamed and closed, causing an overflow of the bile into the circulation.

This inflammation of the duodenal membrane that closes this biliary passage, is generally induced by the concatenating causes of a dyspetic habit, that causes the food to sour in the duodenum before it is passed forward. Its mucous membranes are inflamed thereby, and congested, until the duct is closed.

The black jaundice is induced by a chronic obstruction of a portion of the capillary execretory ducts with minute biliary calculi. Having not the ability to send the bile forward through these obstructed ducts, it overflows into the venous circulation, and, it being in a small quantity to diffuse through the cuticle, the light changes its color to that of a dingy brown, called a mothy complexion.

TREATMENT FOR THE YELLOW JAUNDICE.

If the patient is free from fever, give warm pennyroyal tea, sufficient to make the patient moist; then give tinc. of lobelia, ʒ ss. in tepid water, f. ℥ iij. to be taken all at once. Repeat this dose in 45 minutes, then take a dose every 30 minutes until it operates as an emetic. If emesis is not induced by giving ten doses, no more should be given at this time. If the liver is not thrown open during this effort, defer its repetition two days; during this two days give nitrt. of potassa gr. xl., t. sang. can., ʒjss.; leontedon terax, ex. gr. vi.; veratr. glob., 30; dissolve the extracts and globules and niter in hot water, ℥iij. Dose, ʒjss., every two hours during the day time. Proceed with the use of an emetic with the formula, during two days, and follow this procedure until the liver is opened by the use of an emetic once in two days until it is accomplished. Then give salicin, gr. x., added to the above preparation, and follow it until the patient becomes strong and the yellow tinge has disappeared,

TREATMENT FOR THE BLACK JAUNDICE.

Begin the treatment with a lobelia emetic, as directed for yellow jaundice. After the emetic has operated well, put the patient on the following prescription, for it will require one year to overcome the deranging causes and habits of the system that induces this disease: ℞ wahoo bark of the root, 4 oz.; boil and extract the strength, strain it off and boil it down to one pint; add dandelion ex. gr. xxx., t. juniper berries, ʒiij.; t. wintergreen, ℥iv. mix, dose, ʒij three times per day for ten days, unless this quantity shall prove too laxative; in such case take one-half the amount; after that takė one drachm three times per day. The emetic should be repeated once in three or four weeks for three times, until three have been thus administered. Either use a little capsicum, or ginger tea, every time the bowels are painful. If the use of this syrup is judiciously used

to keep the bowels and liver sufficiently open, and in that condition to secure one easy passage of the bowels per day, after taking up the first syrup, in about one year the complexion will become fair and the disease cured.

SCARLET FEVER.

SCARLATINA SIMPLEX.

This mild form of the disease seldom assumes a scarlet appearance, unless the patient has been prostrated previously by some other form of disease.

The most common cause of this type is impure air, the use of acidulous fruits that induce renal obstruction, and by taking a cold that induces congestion in the cervical portion of the spine, that obstructs nutrition in the membranes of the fauces and tonsillary glands. Sleeping too warm and in small and unventilated rooms ; to subsist through the night upon an atmosphere that is growing less in oxygen and increasing in the quantity of exhaled carbonic acid gas from the person or persons, to exhaust the atmosphere of vital support, and poison it until it can but feebly support life. With this enervated state of the system, renal and liver obstructions are resulting concomitants, and the spine, under this systemic condition, collapses upon very slight exposures to cold. Cases of this type of scarlatina are sporadical and non-contagious. The proper safe-guards are proper ventilation of sleeping-rooms, proper clothing, and avoidance of acid fruits and *sour bread.*

SYMPTOMS.

Languor and debility, with loss of appetite, precede, for a few days, the febrile accession. The pulse is frequent and small at first ; inflammation of the tonsillary glands is a prominent symptom in all the forms of this disease, and which augments in intensity with the gravity of the type. When this local inflammation extends so deeply as to stricture the ascending sympathetic nerves that join with the supercervical to take care of the brain, it then endangers fatal inflammation of the brain. Then the febrile symptoms become augmented, and the paralysis of the nerves of the skin, induced by cerebral congestion, connected with the great force of the heart, under its

bounding pulse, the capillary arteries become ruptured thereby, and some of the red globules escape under the cuticular membrane, to induce the scarlet appearance. Then you have a case augmented to that of the second order, called *scarlatina anginosa.*

Paralysis of the branches of the sympathetic nerves, that are sent out from the supercervical ganglia, to take care of the membranes of the fauces and salivary glands, leaves these parts without their vital support, and congestion, inflammation and ulceration must follow, if active measures are not instituted to relieve the stricture that induces the paralysis of these nerves.

SCARLATINA ANGINOSA.

This form is the one that is stricturing the ascending sympathetic nerves that induces cerebral congestion, and the parotid as well as the tonsillary inflammation is present; the febrile symptoms of which run so high as to induce the scarlet effusion. Then the danger lies more in cerebral congestion than in the canker that assails the salivary glands and surrounding membranes. When the brain is congested the skin is left in a paralyzed state, having no support sent to it from the brain, rendering congestion and effusion under a high febrile action of the heart inevitable; consequently, the scarlet effusion is a pathognomonic symptom of dangerous cerebal inflammation dependent upon the stricture of the cerebral nerves by the tumidity of the salivary glands. Instead of it being a relieving symptom, which some authors have claimed to be fully as necessary as that of measles, it is a dangerous advance. More cases die in this disease with inflammation of the brain than from the damage that the glands and vessels in the throat sustain.

The most that is necessary in this case is the relief of the paralysis of these vital cerebral nerves To accomplish this end the tumidity of the congested membranes and glands of the fauces that encroach upon these nerves must be relieved. To accomplish this end, a strong decoction of marsh rosemary may be applied to the glands and cankered membranes of the fauces with a soft swab, and repeat it every ten or fifteen minutes until the patient can swallow without difficulty; then its application may be protracted to one-half hour.

When the fever is intense, sponge the whole surface over with soft warm water. If the patient is comatose, add tinct. of capsicum to it. The spine requires the application of a stimulating liniment to it once per day. The patient should be allowed to drink freely of a tea made of mountain mint, pennyroyal, spearmint or peppermint. Open the kidneys with Nitrate

of Potassa grs. xv, Aqua f. ℥ij, dose, f. ʒiij, every hour. At the same time give three-fourths of a grain of Podophyllin. After this has cleared the liver, give diaphoretic powders grs. ij, every three hours until the patient rests well and a gentle diaphoresis is effected. Care should be used to keep up an action of the kidneys and liver until the patient is convalescent.

. As soon as the fever subsides give salicin grs. x, Aqua f. ℥ij. Dose, ʒss every half-hour.

The marsh rosemary wash should be made from one ounce of the root to f. ℥j, of the decoction. To effect this, boil and strain off two or three times to get out all of the strength, then boil it down to one fluid ounce. If this is faithfully applied, it will relieve the canker of the glands and membranes in a few hours, and the fever will subside as soon as this congestion relieves the stricture of these sympathetic cerebral nerves.

This treatment has not failed to give prompt relief to cases in my hands in a practice of over a quarter of a century.

DIPHTHERIA,

OR SCARLATINA MALIGNA,

Most usually occurs in a contagious form in February and March. This is only an aggravated state of the symptoms, from excessive glandular obstruction and morbific influences generated midst this contagion, in which the canker affects other parts of the system besides the throat and salivary glands as in the pylorus and intestinal mucous membranes. Its characteristic feature is the extension of the canker in the fauces over the diphtheretic membrane into the trachea.

In this case of pyloric or gastric inflammation, the disease is ushered in with obstinate vomiting, and within the space of a few hours the salivary glands, fauces, and portions of the soft palate and cheeks, become involved in patches of white canker, and a high fever follows, under which all the morbific symptoms rapidly augment in intensity, which, if not arrested, will terminate the case fatally in from twenty-four to forty-eight hours. The parotid glands ulcerate and discharge from the ears ; the tongue and soft palate accumulate sords that turn black and block up the passages, and a tough, ropy phlegm is secreted from the glands and palate that causes a rattling in

the throat, and which greatly endangers strangulation. The soft palate and tonsils slough, and a corrosive diarrhœa sometimes sets in that inflames the external skin wherever it comes in contact. The scarlet symptoms make an unusually early appearance, and fatal congestion and inflammation of the brain is rapidly progressing to relieve the patient from its forlorn condition.

The sequela of this order of scarlatina are frequently of a very unpleasant character, such as disfiguration from scars, perpetual deafness, and loss of sight.

TREATMENT.

When this form of the disease is ushered in by vomiting, special treatment is required to relieve the pyloric or gastric inflammation. To overcome this inflammation, give a mild decoction of marsh rosemary with fifteen grains of Nitrate of Potassa dissolved in it. ℞ Marsh Rosemary one ounce, made in decoction f. ℥iij. Dose, f. ʒij, every one-fourth hour until the vomiting subsides, then give an enema of podophyllin 1½ grs. cut in ½ʒ of alcohol, and add Aqua f. ℥j, olive oil ʒj; mix. Use it at once and take pains to have it retained by making gentle pressure with a napkin on the perineum for some time. The balance of the treatment, except the use of the podophyllin by the stomach, is the same as that recommended in the order anginosa.

The use of the pulmonary balsam should be freely enough to keep up the action of the tonsillary glands and membranes of the fauces, as soon as the canker becomes subdued, and followed until the patient's recovery is complete.

ACUTE BRONCHITIS.

This disease originates from an exposure to cold that chills the upper portion of the spine, and the oblongata. By the long exposure to cold, the thermal standard becomes sunk below that required for nutrition, and the periosteal membranes of the spine become so much congested and thickened as to encroach upon the nerves that pass out from the spine.

A stricture of the eighth pair of nerves at the oblongata, as in pneumonia, is involved, and a partial suspension of nutrition in the membranes of the bronchia obtains; and their capillary

arteries become congested and inflamed. A very troublesome cough ensues to dislodge the effusion of serum from the membranes of these tubes, which is frothy at first; but if the inflammation does not terminate by resolution, suppuration of the membrane follows. The expectoration then assumes a yellow pus-like appearance while the old membrane is being removed and the new one is forming to supply its place. The direct lesion lies in the state of the nutritive nerves that follow the ramifying arteries of these bronchial membranes. The belching cough serves to aggravate the congestion to a state of effusion, and to lessen the prospect of a termination of the inflammation by resolution. Consequently early and prompt treatment are indicated to thus terminate the inflammation; and as this case is one in origin and lesions analagous to that of pneumonia, the same treatment is recommended.

The danger lies in the degeneracy of the case into one of chronic bronchitis, that often proves very intractable, if not fatal. But with the early and prompt treatment recommended, seldom fails to terminate a case favorably in the course of two or three days. The following is a succesful course of treatment:

TREATMENT.

Begin by giving a solution of nitrate of potassa gr. x, in cold water f. ℥iv, dose, ʒiv, every one-half hour. At the same time give podophyllin grs. j, and repeat both the solution and the pod. if it does not operate well in twelve hours. After the liver is well cleared, give diaphoretic powders grs. iij, every three hours until the congestive cough subsides. After one day's treatment thus, give the following expectorant: Tinct. Lobelia f. ℥ijss, tinct. peppermint ʒij, tinct. sang. can. f. ℥iij, tinct. tolu ℥ij, s. syrup Oiij; mix. Give of this mixture ʒj, every one, two or three hours, according to the demand, to relieve the cough. Apply a mustard paste between shoulders and apply the spinal liniment on the spine once per day. Also give a solution of the extract of hyoscyamus grs. viij, to the f. ℥ sweetened, and add ʒss, of the tinct. of peppermint. Dose, ʒj, three times per day. The room should be quiet and of a uniform temperature of 70 degrees. All the cold water desired should be allowed, and the diet should be of gruel.

CHRONIC BRONCHITIS.

For chronic bronchitis keep up the action of the liver by giving one gr. of podophyllin once per week; at the same time give the following syrup: T. lobelia seed, ℥iss; t. sanguinaria, ℥ij.; t. tolu, ℥ij.; t. podophyllin, grs. iv, cut in the above tinctures: t. pepperment, ʒj.; road nettle, urtica diorca, ℥iv. Make decoction ℥iv. and dissolve in this ex. hyos. grs. xx; refined syrup, ℥xv; old bourbon whisky Oj. Add the decoction to the syrup after all the other ingredients are well mixed with the syrup. Shake all well together, and it is ready for use.

Dose, one teaspoonful three times per day, two hours after each meal.

Apply the spinal liniment to the back of the neck, and between the shoulders at bedtime. Thus continue the treatment until the patient recovers. The fluid ex. of road nettle, f. ℥iv., may take the place of the herb.

DIET AND PRECAUTION

Avoid using anything sour, exclude coffee and hot cakes; avoid late hours and exposure to a damp or cold atmosphere. Do not lean the back against anything cold, or a cold wall, or allow a strong current of air to drive upon the back of the neck or head. Wear a felt spine and chest protector during the cold winter weather.

LUNG FEVER, OR PNEUMONIA.

Pneumonia is one of the most frequent visitants of the temperate climates, and those of higher latitudes, causing great mortality when it is epidemical. The direct lesion in this fever is suspended nutrition in some of the lobes of the lungs, inducing congestion and effusion of the red globules that gives the rusty color to the expectoration. The mediate cause is an obstructed state of the pulmonary nerves of nutrition at their central root of one of the pneumogastric nerves that preside over nutrition in the affected lung. Congestion in the membrane of the oblongata, or a stricture of a portion of the nerve in its transit through the cranial passage, or through the neck to the chest, caused by taking a cold that congests and thickens the membranes that encroach upon these nerves to obstruct

them. The cold that precedes an attack of pneumonia is usually inordinately severe, so much so as to induce congestion of the liver and renal organs, to obstruct them more or less in their functional work.

The symptoms in the case are a very dry, belching cough, with rusty or bloody expectoration mixed with frothy mucus. A severe determination to the head, which becomes very painful, often a severe pleuritic pain in the left side about the region of the heart; great suffering by the patient in the region of the spleen, and a bounding pulse. When the case assumes a high continued fever, it is an unfavorable omen of an obstinate congestion, and will soon terminate fatally.

All possible diligence should be used to alleviate every urgent symptom; to moderate the fever and induce diaphoresis or sweating, as soon as possible, and to keep it up gently and continuously is very important. Keep the room dark and quiet, to allow gentle sleep, which is so necessary to control the head ache and abate the fever. By the observance of these sanitary means, the treatment will prove much more successful, when, by a different course, the best of treatment may prove unavailing, and the patient quickly fall a victim in this disease to a fatal hepatization of the congested lung. The lungs become tumid, filling the chest, and allow but little space for the inhalation of air, consequently it has to be carried on rapidly to supply the system. This must be supplied constantly under all circumstances, or it alone would be a cause of death; by it being ever deficient, under any circumstances, is a cause of emaciation and debility, and every person who feels oppressed for the want of more air, can, by spending more time in the open atmosphere, find relief. Solar light and fresh air contribute more to the health than man will ever realize, for the reason that they are accustomed to live in houses. This is demonstrated in the lives of hunters and Indians. The system is a particular vessel, capable of receiving and imparting all the elements designed to benefit it. When these elements have imparted their divine treasure to the system, they retire and give place to the cavalcade of others freshly laden, to keep up the systemic supply. When the skin lacks the ability to keep the thermal equilibrium when exposed to a lower temperature, a draft will be made upon the caloric more internal. When this thermal standard is sunk below 75 degrees, nutrition becomes suspended and congestion results. Preceding an attack of pneumonia, the upper portion of the spine is thus chilled, and its membranes thrown into a state of congestion. Obstruction of the liver follows. The congestion of the spine interferes with the insulation of the pneumogastric nerves to an extent to induce a partial suspension of nutrition in the

lungs, followed by conjestion and effusion. When the kidneys are so much obstructed as to cause deficient systemic nutrition, a high fever with a bounding pulse will obtain to induce pleuritic pain and effusion to color the expectoration. When thus complicated, it takes the name of *pleuro-pneumonia*, and when accompanied with a continuous diarrhœa, it takes the name of *typhoid pneumonia*. To account for this typhoid type has mastered many eminent pathologists, the sanity of which may be elucidated by taking into consideration the abnormal conditions of the patient when being exposed to the chill that usually precedes the pneumonial congestion. This epidemical typhoid type of pneumonia very seldom occurs, except in the cold weather of the latter part of February, and with persons who have been too closely confined during the preceding cold winter weather in small, unventilated rooms, wherein the number of its inmates were sufficient to exhaust the atmosphere of its vital oxygen and replace it with animal carbonic acid gas. This state of the atmosphere causes deficient nutrition, renal obstruction and liver inactivity, to induce waning systemic health to a state of debility that leaves the person subject, upon exposure to cold, to become prostrated with *scarlatina*, *putrid sore throat*, *diphtheria*, *cerebro spinal meningitis*, or *pneumonia*, the order of disease being dependent upon the nerve or branch strictured. While the system is laboring under this state of systemic prostration, the chill collapses the kidneys and liver, the renal secretions are carried into the circulation to obstruct the nutrition, and a high congestive fever follows. The diarrhœa is very seldom a present symptom in the first stage of the fever, and when it does occur, it is caused by this uric acid in the circulation being secreted by the liver from the blood, and passing it, in its acrid poisonous state, through the bowels, to inflame the membranes, and thereby keep up a continuous diarrhœa. This diarrhœa is one of the most formidable symptoms to overcome in any type of fever, yet with proper precautionary treatment, it can be avoided, as its occurrence is generally induced by the use of a biliary cathartic before removing the renal obstructions in the case; but, by allowing a few hours to clear the circulation of its poisonous urea before proceeding to open the liver, this precaution will allow the liver secretions to be pure to assist in chylosis and protect the digestive apparatus in its functional work of keeping up the supply of aliment for a speedy restoration of systemic nutrition, while the local congestion that strictures the pulmonary nerves that produces the suspension of nutrition in the congested lung is being overcome, and as these nerves are not injured, only mechanically strictured by the congestion of contiguous membranes, and sometimes by the tumidity of the parotid and

tonsillary glands, direct local treatment is available to render valuable aid in effecting more prompt relief.

TREATMENT.

Begin the treatment by giving a three-grain dose diaphoretic powders, and repeat the dose every two hours until the patient perspires gently and takes some sleep; then give one once in two and a half hours. Also, at the same time, begin the use of the following diuretic solution: Put 20 grains of nitrate of potassa into one-half pint of cold water, and add one teaspoonful of the tincture of wintergreen. Take a tablespoonful every half hour until it is all taken. Also, lose no time in the application of a towel wrung out of hot water, and apply it around the neck as hot as it can be borne, and change it every five minutes for three or four times, leaving the wet towel on the neck and cover it with a dry napkin. If there is pleuritic pain in the chest, apply a similar hot fomentation over the seat of the pain, changing every five minutes, and continue them until the pain subsides; then remove the wet cloth and apply a dry flannel. Three hours after beginning the use of the diuretic, give from two to four half-grain sugar-coated podophyllin pills, according with the age and constitution of the patient. After the liver is properly opened, and the bowels have moved as a cathartic, begin the use of the pulmonary balsam, in one teaspoonful doses every hour, until the lungs feel free from any inclination to cough; then give four grains of salicin, dissolved in two tablespoonfuls of cold water; take such a dose four times per day until the patient feels strong and well. The patient can be allowed the use of cold water to drink in small quantity, sufficiently often to slake the thirst. In case the bowels do not move from the use of the podophyllin pills, in twelve hours, the dose should be repeated, for the congestive symptoms will not fully subside until the liver is properly opened. If the patient be a child that cannot take a pill, in such a case, give half a grain of podophyllin powder in a teaspoonful of milk, and allow a drink of milk to follow the dose.

The diet should not be heavier than gruel, until the fever subsides. It is good practice to apply a stimulating liniment, to be applied the whole length of the spine and around the neck once per day; also, to inhale the volatile gas from the oil of peppermint. Put one drachm of the oil into an ounce phial, then, by holding the phial in the warm hand, will fill the phial with the gas, which may be inhaled for 10 or 15 minutes at a time, and repeated at pleasure as long as the lungs are irritable. With the subsidence of the fever and the cough and a return of the appetite, the treatment may be considered ended,

but while any morbid symptoms remain, the kidneys and liver must be kept gently open. This course has not failed to relieve such a case in from two to three days in the author's hands for thirty-three years.

HÆMOPTYSIS,

OR, A DISCHARGE OF BLOOD FROM THE LUNGS.

Hemorrhage from the bronchial tubes is of very seldom occurrence, compared with its occurrence from the pharynx, palate, and nasal fossæ; the last of which contributes to make up the great majority of cases of spitting of blood.

As the patient is generally unable to determine the source of the leakage, the alarm induced is equally great when it occurs from these unimportant sources. Hemorrhage of the lungs is a very important disease, one that demands a careful consideration in this work.

DIAGNOSIS.

Spitting of light red arterial blood is an indication that it proceeds from the lungs; while venous blood, of a darker hue, is that which usually proceeds from the mucous membranes of the fauces and adjacent parts. Generally it is more profuse when emanating from these veins. To make up a genuine case of this disease, we must find the periodical collapse of assimilation in the extremities, accompanied by a sinking stage, with a slight chill, that induces an apoplectic determination to the lungs and brain, connected with a congestive, suffocating feeling in the lungs. The pulse becomes small and frequent; a fine, nervous, prickly pain is experienced in some parts of the chest, that immediately precedes the coughing up of florid, arterial blood, which usually continues thirty minutes, after which the chill reacts into a slight febrile stage, that is of short duration, and the patient feels more comfortable again. Thus an exacerbation usually culminates daily, at a specific hour, yet in a minority of cases it culminates at alternate days, and occasionally at much greater intervals with females.

In this disease there is not more than one-fifth of the cases that are affected with tubercles in the lungs. The points at which this leakage takes place is that of nutrition. The hurried force of the heart under arterial plethora induces

congestion and effusion from the capillary arteries of a debilitated lobule of the lung, wherein nutrition is but tardily effected.

As the pathology of hæmoptysis has not hitherto been satisfactorily presented by medical authors, it is quite important in this series of discourses that its concatenating causes should be clearly pointed out.

When the lungs and chest are large, an abundance of room is offered for the circulation of air and blood needed for the system under a very deliberately slow respiration and arterial motion. Then the venous and arterial circulation equally balance without plethora in either system.

Paralysis of the numerous capillary nerves that preside over nutrition, in a section of the lung, will induce the congestion on which the capillary rupture depends. Sections of the lungs are under the control of nerves that ramify it with the arteries to the points of nutrition. By reason of a chronic debility of these nerves to assimilate barely the quantity of blood sent to the part by a gentle and uniform motion of the heart, and the chronic debility of the capillary arteries to resist pressure, when a hurried motion of the heart occurs, congestion and effusion occur by distending the capillary vital arteries of the membranes of the bronchia into which the blood escapes.

This hemorrhage cannot be attributed to tuburcular abscess, for it has been shown in the process of breaking down by abscess, that the matrix of the abscess securely seals the capillary arteries and veins around the tubercle, preparatory to the suppurative process, and that after the pus is removed, this matrix officiates to secrete from these abcess walls the plastic lymph required in which to relay these vessels anew. When this process is perfected, this matrix, like a callus formed around a fractured bone, is absorbed and disappears, it having no further offices to subserve.

The ulceration of the membranes of an air cell never occurs until all the vessels that lead to it are first securely sealed by an investing matrix to preserve the vital fluid. Therefore, this hemorrhage must not be attributed to this cause, but sought in one more philosophical. Neither can this hemorrhage be attributed to any defect in the concert of action between the two ventricles of the heart, for the All-Wise Creator, in instituting the heart for this service, well comprehended the necessity of securing perfect concert of action of the two ventricles with each other, in order to prevent the damaging effects that would occur from plethora in the circulation through the lungs, if the two ventricles of the heart were placed under the control of the separate hemispheres of the system, that would permit of an irregular action of these ventricles. Con-

sequently, the heart is organized in such a manner as to contract both ventricles with one muscular arrangement that proceeds from the venous blood in the right ventricle, thereby securing an equal force to clear the lungs that is used to fill them. Both ventricles contract and dilate in direct concert with each other. The diastolic motion draws the venous blood from the vena cava to fill the right ventricle, and at the same time the left ventricle is drawn full from the lungs; and at the same moment, when the systolic motion sends the arterial blood from the left ventricle into the circulation, the venous blood is sent into the lungs by the right ventricle, the arrangement of which admits of no possible means of suppressed action or delay. Consequently, to look for this derangement in an incidental defect in the working of this organ is absurd, for no principle in physiology or pathology of the diseases of this organ of an incidental character, will bear us out in the suggestion. For in palpitation, quick, frequent, or slow pulse, both ventricles participate in at the same moment; and as this disease is periodical or incidental, it evinces that it is not due to organic disease of the mitral valves of the left ventricle that prevents them from patening; for if they were thus deranged, the retrograde force into the lungs would be continuous and not incidental. Neither can it be looked for in the deficient size of the left ventricle, by which the right ventricle forces a greater quantity of blood upon the left ventricle than it can forward in each throe. If this disparity existed in these ventricles, death would ensue in a very short space of time. The only part the heart plays in this disease is that of its exhilerated force and frequency.

This is the order of the ordinary procedure of an attack of this disease. In the duration of the disease it makes poor and defective capillary vessels, that incline to rupture under much less force than when in a state of integrity. Just in proportion to this depraved standard of organization will be the tendency of the capillary arteries to give way to a given force of the heart in times of pulmonary congestion. If some one of the lobules of the lungs shall be laboring under deficient nervous support, and consequent debility to an extent to become congested under the nervous prostration and arterial excitement, connected with an exacerbation in this disease, it is subject to rupture these capillary arteries that yield to the force of the heart.

Again, when this condition of the system obtains, hemorrhage can be induced by any brisk and long-continued muscular effort, that shall over-drive the circulation to congest the weak portion of the lung. The author has witnessed several cases of rupture of these vessels under these circumstances.

Consequently, great care should be used not to excite the

circulation unduly while laboring under this habit of the system.

The general debility that paves the way for this derangement is generally induced by glandular obstruction and spinal disease, but when it assumes its periodical form, it evinces the presence of a malarial intermittent, with the other concatenating symptoms, which must be treated under that head.

This disease is made up of the primary stage of phthisis pulmonalis, and an immoderate circulation beyond the resistance of the enfeebled vessels, that become rended when the circulation is impeded by this sectional lung congestion. When hemorrhage is induced by undue muscular effort, that excites the heart to powerful and rapid action, the hemorrhage then is *incidental;* and its recurrence is dependent upon a repetition of a similar excited state of the circulation. Yet it will recur under much less effort until the rupture has recuperated. The periodical type is the one that belongs to hæmoptysis proper, the congestive symptoms of which rupture the same vessel at each exacerbation.

TREATMENT.

The indications of cure are: First, to arrest the hemorrhage when it is present, by a use of four grains of the extract of hyoscyamus, dissolved in a little hot water, to obtain its effects more speedily. This will usually, by its sedative effects upon the heart, and tonic effects upon the pulmonary nerves, suspend the hemorrhage within five minutes, by it operating to suspend the arterial force and the pulmonary congestion that induces the impediment to the circulation, and that induce the rupture. The hyos. ex. should be repeated in one grain doses every four hours for four days.

When the hemorrhages are periodical and connected with a chill, the treatment advised for an intermittent fever should be used to restore glandular action and perfect systemic nutrition.

This course will restore the action of the paralyzed nutritive nerves, and nutrition in the lobule of the lung will perfect the vessels to standard strength and activity.

Also, give the following: ℞ Winter break root or marsh rosemary root ʒij, made in decoc. f. ℥iss, t. xanthox ʒiv, ex. leon terax gr. xx., fluid ex. of wahoo f. ℥j; dissolve the extract of leon terax in the decoction and mix. Dose, ʒj three times per day. Gentle exercise should be indulged in, while care should be used to prevent any unusual arterial excitement.

The idea that is generally entertained, that the cough must be suppressed for fear of inducing the hemorrhage, should be abandoned, as the cough is not capable of inducing the exciting cause, neither is that of a full inflation of the lungs. Avoid inclement weather and the night air, also the use of anything sour.

PHTHISIS PULMONALIS,

OR TUBERCULAR FORMATION IN THE LUNGS.

The subject of tubercular formation becomes particularly interesting when considered in connection with phthisis pulmonalis. Therefore I design to treat the subject in a manner calculated to elucidate the three stages of phthisis pulmonalis. The lungs are composed entirely of nerves, tubular circulating vessels of the finest order, and an elastic membranous tissue that composes the air cells. Every fiber and part of this viscus is constantly under the recuperative charge of the vital nerves and arterial blood sent to it to minutely ramify in every part.

These very delicate vessels and membranes are dependent upon the purity of the blood and the integrity of the vital nerves to assimilate it into their structure. If the blood shall contain proper elements, the conversion then depends upon the proper quantity and quality of the electric elements to chemically combine with and direct the order of the structure of each part. If the system becomes incapacitated to provide the pure blood, assimilation will be defective and the vitality of the organ lowered, together with all parts of the system. If the vital nerves become obstructed by congestion of the spine in the foramina of the cervical vertebra, so as to interfere with the insulation of the pulmonary nutritive nerves, so as to suspend in part the transportation of the electric elements suitable for active nutrition, the arterial capillaries become congested; then comes sad glimmerings of the necessity for these tubercular formations. Great danger is just here maturing a breach between the capillary arteries and nerves. In this condition the assimilative point in the arteries misplaced from the terminus of the nerve, causing defective assimilation and a neurotic deposit in the terminal sac which is being formed by this congestion. The burrowing process now begins, preparatory to their removal to restore the normal condition, by the process of *breaking down by suppuration,* (which article see under this head in this work). For want of arterial support, by reason of its displacement, the neurine is lost in this fungus or tubercular deposit, which has to come under the alternate law of abscess for its removal and reformation of the part.

An improved condition of the quality of the circulation and the nervous insulation is necessary to secure the success of this regenerating work.

By bringing these facilities to the aid of the systemic powers, this process may be as effectually successful in the lungs as in other parts of the system.

The primary cause of phthisis pulmonalis most usually proceeds from severe congestion of the spine, which obstructs, to a greater or less degree, some of the nerves that support the lungs and the large glands. This spinal congestion is usually produced by a severe cold. The severity of this congestion and its duration very much depend upon the season of the year in which it occurs.

The latter part of winter, after the systemic powers have become enervated by seclusion from the atmosphere, which predisposes the spine to severe congestion upon being unduly chilled for a great length of time. This condition of the system renders it subject to part with its caloric with greater rapidity than when more vigorous, and in this state of nervous prostration, the rally from the congestion is more difficult, and is one that is apt to degenerate into chronic organic derangement of the spine, if neglected. The primary congestion lies in the spine and the secondary one in the organs. The origin of pulmonary congestion depends upon the degree of paralysis of its nerves and the duration of the spinal congestion that perpetuates the paralysis. Every part must receive its quota of electric element to insure assimilative or nutritive support. If in some parts this supply is cut off, capillary displacements may result from the congestion induced. Every willing nerve holds in readiness the supply needed for the waste of every organ and tissue in the system ; consequently when they are unobstructed and the arterial blood is pure, continuous health will obtain. This tubercular displacement cannot obtain until the resistance to arterial force has been greatly debilitated by an unusual systemic decline, by long-continued glandular obstruction that disarms the nervous system to properly support the vital organs. This is followed by defective chylosis and hæmatosis, and a state of chlorosis necessarily results from these causes. This constitutes the tubercular or scrofulous cachexia; and tubercular deposits may obtain in any part of the system when the nervous support is cut off, while the system is laboring under high arterial excitement.

Various causes may constitute the first departure from health that eventuates in this scrofulous cachexia, which constitutes the predisposing cause of phthisis pulmonalis.

Impure air, improper diet, a disparity between great mental activity and muscular action, while leading a sedentary life, as is usually the case in our literary institutions. During the first invasive effects of these causes, but little more than a lassitude and a diminished appetite are experienced, which vacillate between better and poorer days. Presently the poorer days amount to quite an indisposition, and the patient is less brilliant on the better days. This disparity is not very observable at

first, but eventually it becomes very much more apparent. A sallow appearance, with a bluish tinge to the sclerotic coats of the eyes, mark the approach to a state of chlorosis. The patient complains of taking a cold from slight exposure, that induces hoarseness and a tickling cough, that is augmented by brisk exercise of the lingual organs in talking or laughing. Not much alarm is produced by the cough at first, which is generally neglected, fancying it would soon subside of itself, as it used to when they were stronger. Under this enfeebled state of the spine and lungs, upon taking a severe cold that congests the spine from the cerebellum to the vicinity of the inferior cardiac plexus, cuts off the vital support of the pulmonic nerves, and under the high febrile arterial excitement that follows, the lax capillary arteries yield to tubercular displacement, before the too powerful force of the heart for their resistance, after which much suffocating oppression is experienced in the lungs.

This spinal derangement usually first obtains at the superior cervical plexus, that at first induces a catarrhal cough, with phlegmy expectoration ; and as the spinal derangement advances downward, the second and finally the third plexus becomes obstructed, and by reason of this gradual descent of the spinal derangement from above downward from the first to the third sympathetic plexus, is the reason assigned for the upper portion of the lungs being assailed by tubercles first.

The resources of the system must be soon exhausted when the tubercular habit is formed, unless every systemic aid is brought to the rescue. In a dogmatical system of practice, that is out of harmony with systemic law, how much recuperative aid can be expected from it? The sentence of "*weighed in the balance and found wanting*," is written upon the mineral practice in this, as in all diseases that cannot rise without correct medical aid. Total suspension of treatment is much preferable to the use of mercury, antimony, arsenic or iron.

This disease, above all others, is calculated to test the extent of medical ability to comprehend systemic law, and to sift the different theories of practice, by reason of its great mortality.

Dr. Kost says that "it has been estimated that in Europe one-fifth of the annual number of deaths take place from this disease, and we have woful evidence that the proportion is not much less in America.

"In New York, the average number of deaths by consumption is computed at 243 in 1,000, which is nearly one-fourth. The city inspector, in his report for the year 1839, makes the whole number of deaths 7,953, of which 1,315 died of consumption, 460 of inflammation of the lungs, 36 of inflammation of the chest, 28 of bleeding from the lungs, 28 of congestion of the lungs, and 72 of bronchitis—total, 1939."

As the public mind is demanding a specific to overcome this cachexia, demagogues have seized upon the opportunity to fill their coffers by offering pretended secret specifies, and are with flaming bills heralding their certain success, with forged vouchers so numerous that it would seem that for one to die of consumption it must be due to an ignorance of these potent remedies. Persons affected with this disease are not usually apprised of the great departure from health, or how low the system has fallen, the nature of the effort required, nor the great length of time necessary to raise the systemic powers to a healthy standard again. Consequently, the fickle-minded patient will not give any one physician a sufficient length of time to make a point in their case, under the most sane treatment. Therefore, to overcome this instability, it becomes necessary that the patient should be informed of all the bearings in the case, and of the sanitary routine necessary to pass through, by which to regain his lost physical powers. In treating phthisis pulmonalis I have had an extensive experience, and the valuable discoveries thereby gained I am willing to contribute to the profession. I will honor talented authors who are disposed to contribute the value of their experience to the fraternity of practicing physicians; for I am aware that an immense amount of valuable knowledge that has been derived from experience, has been lost to the world for the want of such liberal contributions.

Public security from the ravages of disease requires the preservation of every axiom gained for the promotion of this science. Therefore, I have spared no pains to contribute what knowledge I have gained to this end. Questions quite numerous, and very important to a correct pathology of disease, and a successful practice, which were unanswered in the books, became a source of great embarrassment to me in my early practice. These questions I have taken much pains to explain in this work. These explanations are calculated to not only render this disease more tractable, but nearly the whole catalogue. Beginning my investigations in the plane of systemic law and the resources of life, and prosecuting them through the various abnormal changes that constitute the pnenomena of the different diseases, and finally closing them in a series of general remarks upon the choice of remedies and correct medication.

The particular surroundings of the patient, which tend to depress or cheer the mind, have more importance in this lesion, to hinder or promote the work of recuperation, than one would suppose not being familiar with the powers of the mind over the system. The damaging effects of mental torture, from the mistaken idea that no one can recover from this disease, has defeated the salutary efforts of much judicious treatment, that

might have proved a success under the inspiring influence of a more buoyant hope. The principle is this : to administer to the mind the balm of hope, of the accessible points in the case to be attained in the path of success. This is to mind what an anodyne is to the irritable frame, giving that relaxation and rest needed for recuperation. Lost vitality is a thing not so easily reclaimed as to expect it to return unsolicited. It must be sought with great diligence in all the avenues of the vital resources, for in this decade of health the fountains that were wont to swell the rivers of life, and make green and fragrant the plains of health, one by one begin to fail, almost imperceptibly at first, but as sure as slow, until the drouth of the desert parches all the once fresh and vigorous scene. Then to the fountains of health we must go, when the river fails, and the whole plain is famishing below. These fountains of life, Divinely chaste, are adequate to every supply ; they suffer no waste.

Renewed efforts to command a more vigorous supply of physical power must be instituted. That the most vigorous muscular efforts flow from the soul though the will, no one will attempt to deny. An energetic soul inspires a resolute will that develops great physical power. Then, if we have ceased to call for vigor by shunning labor until the muscles can but feebly respond to the will, these steps must be gently and carefully retraced, as a means of bringing the soul and body into closer sympathetic relation to each other, to restore the systemic powers. If we have lost vitality by seclusion from the open air, we must train ourselves carefully, without undue exposure, to stand the gentle breezes of the atmosphere which is the conservatory of the human molecules, which are little thunder-bolts in themselves, armed with the divinest electricity to invigorate the human frame. Have we lost our health by a waste of vitality in a wanton life ? In this I find more impaired constitutions than by that which arises from chaste labor or excessive dutiful cares ; while midst these errors we should take an early alarm at our waste of vitality, and let the review teach us to mind our ways, and learn that obedience to physical law is health.

The popular idea of a gentleman is to be able to live without labor. Therefore labor, which is one of the greatest sources of health, is rendered unpopular and disgraceful ; consequently, labor is shunned by all classes when they wish to appear respectable. The idea is not of American origin, and since all men here are equal before the law, it is to be hoped that it may meet here with an early subversion, and the highest caste of respectability be given to industry, intelligence and virtue. Such a popular idea would reduce bills of mortality by con-

sumption seventy-five per cent., by thus preventing the constitutional decline on which the disease is dependent. Will the day fail to commend those notable mothers who trained their sons to respect these three cardinal virtues, the result of which are now embodied in the principles of the free institutions of our model government ?

Justice to humanity, undermined by popular prejudices, has never demanded so great a sacrifice as this one, which asks the populace to retire from the fountain of life, to secure the caste of a popular dogma.

In making up my diagnosis of phthisis pulmonalis, I want to find first the points at fault, at which vitality is wasted. If my case is in the first stage, I can usually detect and remedy them. If the case is in the second stage, I shall find that this stage has been rendered possible by the prostration in the first, and that, upon an unfortunate exposure to cold, severe spinal congestion was induced that infringed upon the insulation of the nerves of pulmonary support. Then came severe pulmonary congestion in these deranged parts of the lungs, where the congestion was carried by the bounding force of the heart to this damage in the capillary arteries of the lungs. I shall find the hurried respiration, the small, frequent pulse, the dull sound under percussion, the crepitating sound, like the bending of sole leather, the collapse of the inferior portion of the sternum, much pain in the region of the spleen, that extends up the left side of the chest towards the heart, the spine lame between the shoulders, and in the neck, and feelings of partial suffocation, the kidneys obstructed, parched hands and feet, causing the nails to roll and become very brittle. The prudish state of mind makes the patient find fault with every dish, much of which is due to the state of the brain and nervous system.

In the third stage, I must find the decade of the two former stages, and in addition thereto, the puriform expectoration that evinces the breaking down of tubercles; a very exhausting cough is induced in keeping the bronchial tubes cleared of pus.

The hectic fever, with its three stages, the cold stage, that continues about forty minutes, followed by a febrile stage that gives a flushed cheek and an increased velocity and volume to the pulse, which numbers from 120 to 130 per minute. This stage lasts about two hours, when it gives way to the third stage, that of the colliquative sweat. Each exacerbation that composes these three stages occupies the space of about six hours.

In this last stage, if the system is not well supported and the circulation rendered sufficiently pure to enable the systemic

powers to successfully renew the parts being removed, the case will degenerate to a fatal terminus in the space of three or four months. When this stage becomes complicated with an obstinate diarrhœa, it is a very unfavorable omen. It is indicative of the breaking down of the mesenteric lymphatic glands, connected with endo-enteritis, the last of which bars recuperation and exhausts the system very rapidly.

The three stages of this disease call for additional treatment for all the new lesions that compose them.

INDICATIONS OF CURE IN THE FIRST STAGE.

The first stage, which is noticed by the sallow countenance, debility, predisposition to catarrhal colds, arising mostly from glandular obstructions and spinal debility at the pulmonic nervous centers, suggests the following indications of cure: The kidneys require stimulating to a competent ability to uniformly and properly depurate the circulation. The torpidity of the liver must be overcome and barely raised to a standard of action by gentle alteratives, to secure a good appetite, prompt digestion and natural movements of the bowels. The spine requires a shielding and stimulative protection against the collapse it is subject to from slight exposure to cold. This treatment is important to support the system, while the regimen required in the case is regaining possession of the vital powers to a competency to subsist by the harmony of systemic law, without the aid of remedial agents. The regimen suggested is to seek the pure open atmosphere, that has not been exhausted of its vital elements, divinely designed to invigorate the system, avoiding inclement weather and night air.

The wasted muscles and their lost powers that have failed for the want of a resolute will to command them, must be conscripted and martialed into actual service again, until their energy is competent to support the vital organs. This muscular training should be carefully graduated by a daily increase of effort that shall only keep pace with the muscular ability, developed and conducted with that moderation that shall not increase the frequency of the pulse more than ten per minute.

The patient should be sponged over with soft tepid water, containing bicarb. soda ʒj. to one quart of water every morning, and rubbed off briskly until dry with a coarse towel, and it should be conducted in a way not to induce any chill. At evening use the flesh brush briskly. If any portion of the spine feels obstructed, let some person percuss the spine with the hand several times per day.

Mirthful company is well calculated to give elasticity to the mind and vigor to the system that facilitates digestion and refreshing repose. The hours of sleep and recuperative rest

should not be trenched upon. In the inclement season, fine madder red flannel should be used for under garments, to excite more activity in the cuticle and preserve the caloric. The neck and spine require special protection when going out in the winter weather; care, also, should be taken not to inhale the cold air through the mouth to chill the trachea and lungs. That which is inhaled through the nasal fossæ is partially warmed before it reaches the lungs, so as not to chill the membranes of the trachea and bronchia below the standard for assimilation, for congestion thereby is very easily induced in these membranes in cases of spinal debility.

The *diet* should be nutritious and of easy digestion, and great care should be used to masticate it well. The articles of diet can be selected from the catalogue of those not excluded in the dietetics in this work.

TREATMENT FOR THE SECOND STAGE.

When the first stage is neglected until the systemic powers have lost their control over the capillary arterial resistance in the lungs to the powerful throes of the heart, under severe spinal congestion and consequent nervous paralysis of the pulmonary vital nerves, the termina of the capillary arteries yield to that displacement on which the immediate cause of the tubercle is dependent. •

Thus is inaugurated the beginning of the second stage. In this stage we find the case complicated by this tubercular derangement, in addition to the great general debility.

In this stage greater resolution on the part of the patient and professional skill are required to overcome the tide of circumstances that are setting in against the case.

The additional indications of cure in this stage to that of the first, are to improve the spine at the pulmonary nervous center. Unless this point is guarded against subsequent attacks, the systemic powers will decline in each of their repeated efforts to provide the aid required to construct and circumscribe the bounds of the tubercular matrix for relaying these deranged capillaries successfully. At each of these repeated congestive attacks, the case becomes more complicated by the waste of recuperative power and the extended field of tubercular derangement. Degenerated power is one of the causes of the capillary displacement, and an improved condition of the systemic powers is indicated to support these enfeebled vessels. The system must be supported by every possible means, to enable it to construct the matrix so as to closely circumscribe the bounds of the tubercle to be displaced. This is the object sought to be accomplished in this second stage, and which paves the way for the success of the third and last stage

by the breaking down of the tubercle and relaying these capillary vessels and nerves in the plastic lymph. This is the modus operandi that the system uses to adjust these capillary nerves and arteries in proper position to each other for the resumption of perfect assimilation.

The original idea was, that to succeed in the case, the tubercles must be absorbed without suppurating, and that when the tubercles break down by suppuration, it is a hopeless surrender to a destruction of so much of the lungs.

This solution I have given to teach the rational means of successfully aiding the system to triumph over this perilous condition, known as phthisis pulmonalis, or consumption.

The treatment in this stage includes all that has been introduced in the first stage, and in addition thereto, to provide against a nervous tickling cough that is damaging to the recuperative processes instituted in the lungs, and as has been explained, to provide against the repetition of the congestive cause. Carelessness to have this point unguarded will defeat the most judicious course of treatment in the case.

The sanitary course to pursue is too important and complicated for a patient to undertake without the advice of an intelligent physician, who by experience will be better en bled to comprehend all the points in the case.

Treatment in the different stages is founded upon the different derangements found to be present in the case.

TREATMENT FOR THE FIRST STAGE.

In the kidney derangement I would suggest the use of the following formula: ℞ Tinct. Lupulin ʒiij, Queen of the Meadow ℥iss (fluid extract), Tinct. Xanthox ʒvj, S. Syrup ℥ij ; mix. Dose, three-fourths of a drachm four times per day, or in doses adequate to overcome the torpor and maintain a competent action of the kidneys to properly depurate the circulation.

The torpor of the liver can readily be overcome by the use of podophyllin in alterative doses, given often enough to secure a natural passage of the bowels once per day.

To support the nervous system, use extract of Hyoscyamus in one grain doses four times per day.

To protect the spine, and aid its recuperation, sometimes use the spinal plaster and at other times use the spinal liniment on the spine every night, or every other night, as the case seems to indicate.

TREATMENT FOR THE SECOND STAGE.

In this stage, wherein the systemic powers require more support, and to lessen the inclination to cough due to capillary congestion, give in addition to the treatment of the first stage:

℞ Salicin grs. x, Tinct. Opii. m.xv, Tinct. Juniper ℥ss, Leon Tarax ex. grs. x. Dissolve the extract and Salicin in warm water, ℥iij, mix and add S. Syrup sufficient to make two ounces. Dose, ℥ss, four times per day.

TREATMENT FOR THE THIRD STAGE.

In this stage we are called upon to safely carry the patient through the most perilous crisis in this disease. This stage admits of no margin for mistakes. The plastic lymph of the abscesses must be preserved to lay the fibers and vessels anew by first intention, or fistulous abscesses will follow to exhaust and carry off the patient.

In this stage we find the hectic fever, which is induced by the circulation becoming so highly charged with the puriform matter as to obstruct assimilation; then comes the chill and arterial plethora, and the febrile reaction to resume assimilation, and thereby save the debilitated vessels of the lungs from ruinous congestion.

Then follows the colliquative sweat, which is an effort in this dilemma to depurate this excess of impurities in the circulation through the pores of the skin. If the cause of this hectic fever is overlooked or neglected, and the fever allowed to continue, it will defeat the successful relaying of the removed tissue. Happily all of the mischief of this fever can be prevented by saving the necessity for its occurrence. Prompt activity of the renal organs to keep the circulation free from this puriform matter and other impurities not only saves the necessity for this damaging fever, but it furnishes a pure circulation to insure the secretion of that pure plastic lymph necessary for a perfect resurrection of the removed tissue of the lungs.

As this renal inactivity in this disease is generally divided between glandular obstructions and nervous prostration, the course for the physician to pursue to resuscitate the activity of these organs, is clearly pointed out, which is to stimulate the kidneys with proper diuretics, and to tone up the nervous system to enable it to properly support the organs.

The use of the prescription given for the second stage, if given in doses adequate to support the nervous system and keep up an efficient activity of the kidneys, will carry this point; remembering to always keep up a gentle and uniform action of the liver as directed in the first stage.

If the patient is found in a debilitated state, colliquative sweats will occur from the relaxation of too deep a sleep. To provide against this symptom, give the fluid extract of the star root in one-fourth drachm doses, diluted in two of water, four or five times per day, until they subside.

If expectoration is difficult, a good expectorant should be

given to save the damage that labored coughing may do to the recuperative process in the lungs. Give for an expectorant diaphoretic powders gr. ij, every three or four hours, or as necessity may require. One more important symptom that is subject to occur, in which we must constantly bear in mind to guard against, or at least not to induce by the use of colagogue cathartics, which is a diarrhœa dependent upon inflammation of the mucous membranes of the bowels, which inflammation frequently extends to the mesenteric lymphatic glands. When it becomes thus obstinately seated, the food and fluids will be hurried rapidly through the bowels, chyliferous absorption is suspended, thereby barring further support from the chyle, and causing the patient to sink rapidly.

Consequently, whenever the bowels become too lax, prompt attention should be given to this dangerous symptom. In such case give some soothing remedy at first, such as a decoction of marsh rosemary, in small and repeated doses, until the symptoms subside; and if it shall assume a more obstinate form, the remedy should be given sufficiently prompt to overcome it in a few days.

LARYNGITIS,

OR, INFLAMMATION OF THE LARYNX.

This disease is one of the violent order, that has taken off its captives by thousands; and, in point of fatality, it is not secondary to that of phthisis pulmonalis (or consumption), when it is not arrested in its acute stage.

This human scourge is admitted to be more prevalent where the country retains the water in the soil for the want of drainage facilities; virtually a flat country with a hard-pan bottom that contains a deep alluvial soil above it. The direct cause of this disease is irritation of the mucous membrane of the larynx. The epidemical order is usually attributed to a redundance of carbureted hydrogen in the atmosphere. The inhalation of coal gas that escapes into the room from a poor stove, is the usual predisposing cause in the winter season. In periodic cases a chronic spinal derangement in the cervical centers usually precedes an acute attack. This spinal congestion is most commonly present in all epidemical intermittent fevers, but in this case it is acute.

In the acute stage of the epidemical order, the danger lies in

the effused fluid being converted into a fibrinous phlegm too tenacious to be expectorated, and which accumulates in the larynx until it suffocates the patient. By the irritability of this membrane a severe cough is induced that is almost incessant, whilst a severe determination to the upper portion of the spine and larynx obtain. More circulation is forced upon them than can be assimilated in their half-paralyzed state; consequently, under a high febrile action of the heart, this congestion obtains that permits of this fibrinous effusion.

To keep these vital nerves from being obstructed by the spinal congestion, is the most accessible means of saving the case from degenerating into this dangerous state. The next, is to control the circulation, by the use of arterial sedatives, to give time for this nervous center and these membranes to recuperate. When the patient is too severely attacked to secure this point by the use of the internal remedies indicated, a strong stimulating liniment should be applied to the external larynx and back of the neck, to assist the nervous recuperative rally to terminate the inflammation by resolution. Much is to be gained in this disease by timely aid, for it not unfrequently terminates fatally in from twenty-four to forty-eight hours, and the fatal mischief frequently obtains within twenty-four hours, even when the case is protracted several days. If the case has become chronic, much time will be required to remove the causes that prevent these membranes from recuperating. Many carefully selected remedies have been exhausted by these chronic cases. The inhalation of various stimulants has been resorted to with no better results. Then the question arises as to what encouragement we have for these unfortunate sufferers? Once, I had none; but from a more perfect acquaintance with the systemic law, I find that this disease is rendered tractable, when all the systemic resources can be enlisted by a proper course of medication to make a new effort to recuperate the lesion. The various undermining derangements that prevent the recuperation of this organ must be overcome and turned into allies of support. This course is the safe method that secures the success that attends this practice.

The damage that occurs from imperfect digestion makes the disease more intractable by disqualifying the circulation for active nutrition. The point is not to be gained short of directing a course of treatment that shall secure pure arterial blood, and a free circulation in the vital nutritive nerves that preside over the diseased part. This pure blood will support combustion and energetically combine with the electric radical base furnished by the nerves in abundance, to supply the demands of the part. Having these points gained, we have attained the means of success.

TREATMENT.

In the acute stage, while the powers of the system are in a tolerable state of activity, prompt response is expected from remedial agents. If then the remedies shall be so judiciously directed as to aid the systemic powers in their first and most powerful efforts to regain the lost balance of the nervous circulation, the derangement will be overcome, and the inflammation will terminate by resolution, without leaving behind a chronic weakness.

In the acute stage, to allay the nervous irritability of the system, give diaphoretic powders, five grains, and repeat the dose every three or four hours. To aid in overcoming the cervical spinal congestion, apply a mustard paste on the back of the neck and one over the larynx; remove them before they vesicate the cuticle. Also give a solution of nitrate of potassa grs. xv, in water f. ℥ii, give ʒiv, every hour until it is all taken. At the same time, after giving a dose of the solution, give 1½ grain of podophyllin, and repeat the dose every twelve hours until it moves the bowels.

On the second day's treatment, substitute the above for the following: First, give Old Jamaica Rum f. ʒiii, in hot water ℥i, for a dose, and repeat the dose every five hours, if there is no fever to contra indicate it. In case of the presence of febrile symptoms, substitute the rum for diaphoretic powders, three grains every three hours until the fever subsides.

The spinal liniment should be applied to the back of the neck and over the larynx once per day. Make a decoction of marsh rosemary root ʒiv, boil fifteen minutes, strain off and make f. ℥ij; give three-fourths of a teaspoonful every hour while it lasts. Do not take anything to wash it down, for its local effect is needed in the fauces. Use the pulmonary balsam freely enough to subdue the cough. Great care should be used to prevent the patient from taking cold. The diet should be light, excluding animal food and everything sour until the cough entirely subsides.

The treatment for chronic laryngitis requires a very different course from that of the acute, based, as before stated, upon the systemic derangements present in the case. In a chronic case the cough will be as obstinate as are the membranes slow to recuperate; and, if every facility in regimen and diet are not used that are indicated to improve the case, it will be protracted to render the chances of recovery less favorable.

The treatment should be such as will secure the two great points in the case: the purity of the blood, and a free circulation of the vital nutritive nerves in the laryngeal membranes. These facilities, when gained, and these only, will terminate the cough.

WHOOPING COUGH.

This is a lingering disease, and not unfrequently it proves fatal, surpassing in obstinance many diseases of greater import. Every disease has its local seat and lesion. In this case the rim of the glottis is involved.

This disease has ever been considered contagious, and the closest investigations leave no doubt of the correctness of this conclusion. By my observation in the disease, I find that the distemper first originates by the patient being too much exposed to cold, and by the frequency of such exposures, induces congestion in the superior cervical nervous center, which induces paralysis of the vital nerves assigned to the care of the glottis, which results in congestion and inflammation of this organ.

The disease at first has quite a fever connected with the local inflammation. The patient, having generally been in a healthy state, no danger is apprehended from such ordinary exposures; but, after being exposed to this disease, the usual protective powers are weakened by causing nervous weakness in this cervical center, which is congested at such exposures. Whenever the patient becomes exposed to the contagion, this incubative work is going on, troubling the brain and medulla spinalis, making a smothering cough by collapsing the glottis, when the whooping sound is produced. The spine is congested, and when the cough is severe, it is due to the glottis not being properly supplied with nervous elements to clear the capillary arteries in the mucous membrane of the glottis, and a spasmodic cough results from the fibrinous effusion from this membrane; the cough being an effort to expel it, to keep the air passage open.

If this passage is allowed to become obstructed one minute, under such circumstances, life will become extinct; hence, the acute sensitiveness of the trachea and bronchial membranes as safeguards to perpetuate life. Whenever these tubes approximate towards a state of obstruction by fibrinous phlegm, an unendurable tickling sensation is experienced, which induces the cough; and this sensation will keep it up until the obstruction is expelled. Therefore, the cough is a safeguard to keep open the lungs when they are diseased, and not a cause of the obstruction. This secretion must be suppressed by inducing a restorative of the circulation in the vital nerves, and the congestion in the membranes will subside. By keeping up this action a sufficient length of time, it will effect a cure. When a patient is first attacked with whooping cough, if proper measures are used to relieve the spinal congestion, and perseverance

is used to hold it under control for eight or ten days, the disease will subside; otherwise, if the patient is subject to frequent exposure to cold, and the neck not properly protected, it will be subject to continue for a great length of time, and not unfrequently until severe bronchitis results, and finally ends in fatal pneumonia.

The best time to subdue it is when it makes its first appearance, when the patient is fuller of vigor than at any subsequent period of the disease; and, like all other diseases, the acute stage is the one that puts forth the greatest effort for recovery, and is the one that requires less medical aid to succeed.

If advantage is taken of the earliest stage, it will yield to treatment much easier in the acute stage, when the effort of the systemic rally is put forth to try to overcome these obstructions alone. Then caution should be used to prevent any further exposure for quite a length of time. For soon the lungs begin to take on the same condition, and the cough will be increased in proportion to the extent of the congestion. When danger exists of suffocation, the lungs are always implicated, and the only way to furnish remedial aid is to give a good expectorant; then resort should be had to glandular and spinal remedies. This will necessarily have to be continued in a judicious manner for ten or fifteen days. When the case is slight, it only affects the mucous membrane of the glottis, but when it becomes more severe, it paralyzes and weakens the rim of the glottis, so much so that when coughing severely it collapses, and under this collapse the whoop is produced in an extra effort to fill the lungs.

TREATMENT.

Begin the treatment by giving nitrate of potassa, 10 grs. in solution of decoction of hops ℥ii; dose ʒi every hour, until it is all taken. Six hours after beginning the use of this solution, give from one-quarter to one grain of podophyllin in milk; repeat every twelve hours until it operates well as a cathartic. Then give the following expectorant: ℞ T. sang. can., ʒiv; T. lobelia seed, ʒiv.; T. of tolu, ʒiv.; T. of anis, ʒss.; T. opii, ʒi.; add simple syrup, ℥viij. Shake all until well mixed. Dose, one-half drachm as often as the cough returns, night and day. Also, give 1 drachm of the syrup of rhubarb every night, and one in the morning also, if required, to keep the bowels a little lax. This treatment usually relieves the case in about two weeks. It is well to apply the spinal liniment on the back of the neck occasionally, and use due care to prevent the patient from taking a cold, and avoid strictly the use of anything sour.

DYSPEPSIA.

Dyspepsia is a deranged state of the digestive apparatus, by which a large portion of the aliment is lost to the system by acidifying in the stomach before it passes the pylorus into the duodenum, to do its damaging effects upon the membranes of the consecutive organs in its passage. The term dyspepsia is a wholesale expression, not to be used when a single organ of the apparatus is affected, but it signifies a general derangement of all the digestive organs, arising from a common cause. Each of these organs, when deranged, have their terms to express it. Inflammation of the stomach is called *gastritis*, that of the duodenum, *duodenitis*, and that of the small intestines, *enteritis;* consequently, when authors wish to use a term to express that all these organs are involved in inflammation, it is called *gastro-enteritis*, and the terms acute and chronic are applied to it; consequently, the terms dyspepsia and chronic gastro-enteritis are one and the same thus far; but the term dyspepsia may be further extended to keep in view the progressive mischief of the deranging cause.

Constipation of the bowels is the first observable derangement. This is referable to a torpid state of the peristaltic nerves of the duodenum and the other portions of the small intestines.

Duodenal congestion contracts and obstructs the foramina of the ductus choledochus, and causes an accumulation of glandular secretions in the ducts of the liver and pancreas, which becomes a source of pain, also various symptoms of a general character accompany this obstruction. Among them are nausea, palpitation of the heart, headache, flatulence, cramping pain in the bowels, and vinous fermentation of the food in the stomach. By the morbid state of the pylorus, the chyme is not permitted to pass until it has undergone the process of vinous fermentation. In this process, the alcoholic element generated relaxes the pylorus, and the sour chyme is allowed to pass into the duodenum. The gas eliminated induces the flatulent pains in the bowels, and to save the damage the system would incur from the passage of this sour chyme into the chyliferous circulation, the mucous membranes of the jejunum and ileum become at the presence of it spasmodically contracted to prevent its passage into the circulation, but in its passage it tends to inflame the ileo-cæcal passage, which often results in acute diarrhœa. When the membranes of the alimentary canal become morbidly obtuse to the presence of this sour chyme, they cease to wholly protect the system against its passage into the circulation. From this standpoint numerous diseases take their further complications. Among them are biliary and

renal calculi, tracheitis, bronchitis, phthisis pulmonalis and heart disease. The favorable opportunity to avoid these complications is prior to much systemic decline.

TREATMENT.

Begin the treatment by giving one grain of podophyllin; at the same time give a solution of niter. ℞ nitrate of potassa grs. x; aqua ℥iv. Dose, ʒij every half-hour. After the bowels have moved, begin the use of the following prescription: ℞ wahoo bark of the root, one ounce or fluid ex. ℥i.; marsh rosemary root, ʒiij; bi-carbonate of soda, ʒij; licorice ex., ʒviij; fluid ex. of cypripedium, ʒvi; colocynth, grs. x; tinct. wintergreen, ʒij; ex. dandelion, grs. xl; T. juniper berries, ʒj; s. spirits of niter f. ℥j; ex. hyoscyamus, grs. iij, dissolved in the hot decoction. Boil the wahoo and rosemary a half-hour and strain off, and add the ex. of licorice and boil it until it dissolves; then boil it down to five fluid ounces; add the bic. of soda after the boiling is finished, then add two and a half ozs. of refined sugar; add the colocynth, and when cold, add the other ingredients, and when well mixed it will be ready for use. Dose, one teaspoonful. Take eight doses per day for ten days; then drop off two doses per day until you have four doses per day.

If it shall be needed to keep the bowels open, occasionally take one podophyllin one-half gr. sugar-coated pill at bed time when needed. Stop taking the syrup when the symptoms are improved, so as not to require it.

If afterwards, by taking a cold, the symptoms shall return, have resort to the same until it is overcome; then suspend the treatment, &c.

DIET.

Use boiled rice, good stale bread and butter, soups of oysters, clams and mutton, corn bread, mush and butter, soft boiled eggs, and two drachms of maderia wine, added to the mush and butter; sirloin of veal broiled, roasted veal seared well; sauce; prunes, blue berries and figs. Use best Japan tea. Avoid every thing sour. Use the flesh brush on the spine and chest every night; also use the spinal liniment on the spine every second night. Dress comfortably and use gentle exercise.

ASTHMA.

This disease has been hitherto considered as being among the obscure secrets of the unknown principles of the physiology of the lungs, and the involuntary motor nervous system. By

reason of the subtle combination of derangements that culminate this disease, and its great intractability in the hands of the majority of physicians, and the great amount of suffering it induces, its great importance demands a very critical analysis of all the abnormal conditions that are found contributing to derange respiration.

Asthma is usually divided into two kinds, the *idiopathic* and the *consecutive;* but I think a more consistent division is that of the *irregular* intermittent, that may recur at any moment, recurring perhaps every hour and of but a few moments' duration, and the *periodically* intermittent,that recurs usually twice in twenty-four hours, between the hours of twelve and two o'clock a. m., and four and six o'clock p. m., the paroxysm of which usually lasts from one to two hours; both varieties being of a spasmodic character, but the latter is less severely suffocating than the former. A fit of irregular spasmodic asthma is usually heralded by a strictured feeling in the chest that augments into a severe spasm, that seems to threaten a total suspension of respiration ; but as it reaches its maximum, a large quantity of glairy mucus is expectorated the spasm subsides and allows the patient to respire comfortably again. An attack of the periodical order is usually preceded by a sinking feeling, the extremities become cold, and the labored breathing augments until a cold, clammy sweat drenches the whole surface of the patient. The countenance becomes haggard, anxious and livid, evincing great distress. The chest feels strictured, and the respiration has to depend upon the voluntary efforts for its continuance or perpetuity until the spasmodic condition subsides. This condition is from one to four hours duration, after which the patient becomes comfortable until another periodical attack. Persons affected with this disease are more subject to it in the warm, muggy months, that are dependent upon south winds, which induce a light atmosphere deficient of oxygen.

The direct cause of an asthmatic paroxysm is the suspension of the nervous circulation in the sympathetic functional nerves of the lungs, and the involuntary motors of the diaphragm. Here allow me to remark that the position I take to explain the cause of this disease is based upon my physiological discoveries of the functional nervous arrangement of the lungs for the work of hæmatosis and the involuntary motion of the diaphragm, which article see under the head of *Hæmatosis* and *Diaphragmatic Motion*, in this work. The sympathetic nervous system becomes disqualified to properly support the diaphragmatic motion whenever a paroxysm is present. The question arises as to the cause that thus disconcerts these functional nerves at the time of this paroxysm. I answer that respiration is dependent upon the motion of the diaphragm to fill the lungs with air, and the

chemical work of arterializing the blood, upon a discharge of the electrical element for hæmatosis from the functional nerves that terminate at the air cells. These functional nerves of the diaphragm and lungs arising, as they do, from the same nervous centre, sympathize with each other as follows: As soon as a full tension of the membranes of the air cells is reached to elicit this electrical emission, the diaphragm is relieved of its contractile force, and the lungs allowed thereby to collapse. Thus these two branches of sympathetic nerves reciprocally carry on the work of respiration.

This pulmonary derangement is induced by the draft made on the sympathetic nerves to arouse some delinquent organ to perform its offices ; as that which is made to remove severe obstructions from the biliary excretory ducts leaves the sympathetic respiratory centres without an adequate support for the work of respiration. The tension of the air cells not being effected, the diaphragm is left in a strictured state, that calls for bringing into use the voluntary nerves and muscles of the diaphragm, in order to subsist during the paroxysm.

The principal part of the nerves of motion are at the command of the will, to do the work of protecting the person, and providing for the demands of life in a physical world. But those which impel the circulation and respiration were of necessity important labors that must be regularly continued, as well in the unconscious, slumbering state, as that of a wakeful, conscious one. Consequently, the Divine left not these important functional labors subject to the caprices of a finite mind, but placed them under the provisional rhythmic forces divided between the structure of the organs and the supporting energy of the sympathetic nervous system, which is ever in harmony with the state of the systemic powers, and in close sympathy with the standard powers of the vital nervous system, be they strong or feeble.

Prostration of the system is the predisposing cause that permits of the diversion of the systemic from the ganglionic support. This unmans the renal organs for promptly depurating the circulation of the impurities therein contained. The liver becomes obstructed by the improper stimulus of these impurities left in the circulation by this renal delinquency ; then the brain and spine becomes quickly injured by the poor quality of the blood used for their recuperation. Gossamer fibers cannot be composed of gross material. The gross material will enlarge the calibre of these nervous fibers to the detriment of their insulation. With these derangements present, a high arterial excitement will induce a great derangement in the lungs, and engorge the membranes of the air cells so much as to lower their sense of the stimula of the oxygen.

The instantaneous relief from a fit of asthma derived from the inhalation of the smoke of burning stramonium and salt petre pastiles, is effected by the nervous reaction induced from the strangling effects of the inhaled smoke.

This circumstance reveals the nervous character of the disease, and forces the conclusion that a paroxysm is symptomatic of derangements in other organs.

To elucidate all the concatenating causes that contribute to this systemic decline manifest in this disease, we must begin first with impurities in the circulation, biliary obstruction and spinal congestion, that admits of nervous debility barely able to support the organs in a state of equilibrium. When the system is thus prostrated, any derangement of the system that calls for a periodic nervous rally, will bring on a periodic fit of asthma. When a damaged state of the pulmonary air cells obtains, then every excitement that induces much nervous diversion from its uniform balance will contribute to an asthmatic paroxysm. There are many other disposing causes, such as an impoverished atmosphere, musty dust, sleeping on feather beds, over-distended stomach with gas or food, indigestion, over-taxing the brain with exhausting mental effort, etc. No disease is so justly deserving of close observation for careful treatment as this, and no disease requires more care in diet and regimen, in order to rise above the prostrated condition on which the disease depends.

The withered parts must be resuscitated and turned to the work of self-support, and thereby contribute its surplus power to the stamina of the system. Some cases are much more complicated than others ; the simple order yielding readily to an invigorating course of treatment, while the most complicated order requires much time to overcome the many abnormal conditions that prevent recovery from these asthmatic symptoms. Frequent and short respiration helps to keep the system in a debilitated state, while deliberately full inspirations contribute to invigorate the system. The inhalation of carbonic acid gas will render life extinct in a few moments ; the absence of free oxygen to induce the combustion in the lungs is this fatal cause. Therefore, an atmosphere unimpoverished of its oxygen, is required for the greatest measure of health. To inhale more oxygen than that contained in standard atmospheric measure will be subject to induce ruinous combustion in the lungs. Comfortable lodging on a spring bed ; excluding feathers ; supply the room with fresh air and light. Damp rooms, high-colored carpets and dust, are objectionable. Use pure soft water to drink, and temperately abstain from the use of alcoholic beverages. With these sanitary measures, and a judicious course of treatment that will overcome the

derangements on which the debility depends, will, with proper time, restore the health of the patient. The points to be observed are, a prostrated nervous system that but poorly supports systemic nutrition, direct spinal congestion at these ganglion centres. Sour chyle is one of the most frequent causes that irritates the sensitive membranes of the air cells, and when carried into the circulation often induces neuralgia of the brain and the medulla spinales. The damage it does to the brain is a source of debility that is of much injury to the organs in disarming them of their functional powers. The next most damaging cause is that which proceeds from renal secretions being turned into the circulation. This inflames the pancreas and liver, and renders the case more complicated by thus obstructing nutrition to induce systemic decline, and render recuperation more difficult.

It will be a judicious plan to treat this disease upon the principles laid down under the head of each derangement present in the case. When the patient has an asthmatic paroxysm, if the strictured diaphragm can not be overcome by powerful voluntary efforts to inflate the lungs to full expansion of the air cells, it will be best to do it by the inhalation of smoke of burning asthmatic pastiles, or, which is nearly identical with this, is to inhale the smoke of dry, thick, brown paper that has been saturated in a solution of nitrate of potassa. ℞ Nitrate of potassa, grs. 60, water f. ℥j. One thorough strangling inhalation will so thoroughly inflate the air cells as to elicit the nervous expenditure at those points that relieves the strictured state of the diaphragm. Then, by using a little effort for full inspirations for a little time, the paroxysm will subside. In pursuing this course, it gives momentary relief and saves the strength of the patient, while the remote causes are being overcome by a judicious course of treatment. Immediately after subduing a paroxysm, begin the use of the following prescription : ℞ Hyoscyamus grs. 40, ex. dandelion grs. 30, t. juniper berries ʒij, veratrum globules, No. 2, fifty, nitrate of potassa grs. 30, fl. ex. of wahoo f. ℥j ; dissolve the extracts in hot water f. ℥ij, and the nitrate of potassa and globules, and when it gets cool add the other ingredients ; then add simple syrup f. ℥iij. Dose, ʒj diluted in water f. ℥ss. Take such a dose every three hours, and take an extra dose when the strictured breathing shows its appearance. If the paroxysmal attacks are severe, this preventive dose should be two drachms. If the amount of wahoo in this prescription does not keep the bowels sufficiently open, more may be added to suit this necessity. If the liver shall at any time become obstinately obstructed, as is frequently the case, it should be cleared by one grain of sugar-coated podophyllin pills ; then proceed to

keep it open by the use of wahoo syrup. If the patient is much debilitated, or the case is periodical, support the system by the use of the following: Sweet spirits of nitre, 2 fluid ounces, quinine grs. 20; dissolve the quinine in the sweet spirits of nitre. Dose, f. ʒj, diluted in water f. ʒ4. Give such a dose three times per day. Suspend its use when the patient becomes sufficiently strong to do without it.

When the case proves unduly obstinate, it is usually due to a great number of small concretions that obstruct the small capillary biliary ducts of the size of onion seeds. The author expelled and preserved a two-ounce phial full from a case of severe asthma in Fox Lake, Wis. They were dark brown, and looked much like onion seed. An occasional lobelia emetic will dislodge them all. The debilitated spine may derive much benefit from a good stimulating spinal plaster.

When dyspeptic symptoms arise, they should be relieved by remedies recommended under that head. If the patient is intemperate, he must abandon the use of all alcoholical stimulants, as they tend to perpetuate the disease. The different phases this disease assumes with different persons, and even with the same person, renders it a difficult task to make out the most judicious course of treatment to persons for each variety of complications. Therefore the proper course to pursue is to give due attention to every deranged organ in the case, until the systemic harmony is restored, using judgment to determine the amount of doses needed in the case. The author has had great success in the use of the following treatment:

TREATMENT.

To relieve a fit of asthma, dissolve 10 grains of extract of hyoscyamus in hot water one ounce, tincture of lobelia seed 10 drops; tincture of bloodroot 10 drops; sweeten with one teaspoonful of sugar, and add tincture of wintergreen 15 drops, or one-quarter teaspoonful. Give one-third of it for a dose, and repeat it every hour until the asthmatic tightness of breathing subsides. Then prepare a solution of nitrate of potassa, 30 grains in a half-pint of cold water, and add T. of peppermint five drops. Give one tablespoonful every half hour for three hours; then igve one and a half grains of podophyllin in milk; then use a dose of the solution once per hour until it is all taken. After the liver is well cleared by the operation of the podophyllin as a cathartic, prepare the following: ℞ Hyoscyamus extract (Henry Thayres), 60 grains; extract of dandelion 60 grains; nitrate of potassa 60 grains; tincture of juniper berries, 6 drachms; tincture of blood root 6 drachms; tincture lobelia seed 2 drachms; fluid ex. of wahoo 2 ounces. Dissolve the extracts in two ounces of hot water,

and add the nitrate of potassa, and when cool add the other ingredients. Then add one pint of sugar syrup. Dose, one teaspoonful, and repeat the dose every two or three hours, unless the wahoo in it proves too laxative. In such case, take less, and add extract of dandalion 30 grains to each two ounces of the syrup.

The object to be attained is to keep up a good action of the kidneys ; keep the liver only gently open, and that the asthmatic symptoms be controlled by the use of hyoscyamus in divided doses as small as will suffice. Some persons will require more than others. The patient will not bear tonics or ardent spirits. The diet should be free from everything sour, and avoid sleeping on feather beds, and see that the room is well ventilated where it will not blow upon the patient. Use a stimulating liniment on the spine once per day.

SCIATICA.

This disease is one of quite frequent occurrence in cold climates.

The knowledge of its precise lesion has been a subject of autopsical search, but being discouraged by this fruitless source of information, it has been abandoned, and its local cause left to conjecture and speculative opinion.

In all my cases of sciatica, I have inquired into their previous habits and conditions of their systems, and I have found the concatenating causes leading to an induration of the neurilemmas of the sciatic nerve and its branches, which are sent to he hip and knee joint. This deranged state of these neurilemmas is mostly due to glandular secretions turned into the circulation. The membranes of the sacrum suffer from the same cause, and the nervous system becomes helplessly prostrated and sensitively irritable, so much so, that upon the least excitement a nervous pain shoots down the limb.

Between the cylindrical cortical lamina of the nerve hundreds of delicate gossamer fibres are stowed in a bundle, which are coursing their way from their centers, sending out slips along the way for every part of the limb. While their insulation is undisturbed, no sensation is realized the felicity of health reigns. The dependencies for the duration of this state of health are perfect depuration and suitable elements for food, proper temperature, good judgment in avoiding exposure

to every detraction from the balances of health. During the different attacks of suffering the patient undergoes, there will be a direct prognostic symptom of an incipient stage of the disease. Here are the symptoms: The back feels as if it was broken at the loins; the failing strength is daily apparent; the ambition usually wanes with the progress of the disease and loss of strength; colds are acquired upon slight exposure, at which time the person begins to feel a pain in the lower limb under the knee; the internal cord of the thigh feels tense and sore. Living thus defiant of the internal organic derangements, the system will daily decline. Among the causes that lead to this decline are: excessive labor, broken rest, exposure to wet and cold while in an exhausted state, and a habitual use of acids. A severe cold forms a crisis for glandular obstruction that precedes spinal debility, thickening and induration of the neurilemmas of the nerves. A corresponding derangement obtains with the digestive organs, and the dormant nerves martial a combined force for the resuscitation of the strictured sciatic nerves; consequently, in this rallying effort, a fever arises, and with it the subsultus pain that becomes more unendurable as the disease progresses. With the continuation of the cause, the system rapidly sinks, and the patient becomes exhausted from the intensity of the pain.

In this agony and loss of vitality, we find that the proper treatment will relieve the distress and restore the patient, if seasonably instituted. In an early stage of this disease, no one is more tractable to remedies, but cases of long standing are groundless of all hope.

The indications of cure are to relieve the pain, to support the nervous system, the renal organs and liver in their functional work.

TREATMENT.

Give English or solid extract of hyoscyamus, in three-grain doses, and repeat the dose every hour until the patient is quiet and can get some sleep. Then skip three hours; then give four or five grains every three hours, or as often as needed, to keep the patient tolerably free from pain.

Also, at the same time, give a solution of nitrate of potassa, grs. xx, in aqua f. ℥iv. Dose, f. ℥ss, every hour. Also use the following: ℞ T. sang. can. ʒss; T. lobelia seed, ʒj; simple syrup, f. ℥ij.; tinc. pep., ʒ¼. Dose, ʒj every hour. After the patient has got some relief from the pain, give two grains of podophyllin to open the liver. After the cathartic has operated well, give salicin grains v, every two and a half hours. Judgment must be used to keep the liver and kidneys gently open for a long time. Use the spinal liniment on the spine once per day.

TETANUS.

Much that has been written upon this disease has had its tendency to create that excessive alarm in the patient that tends to make the derangement more intractable. The one incision that is most disposed to tetanus is in the flexor tendon of the thumb. Help must be immediately obtained to prevent this alarming disease when this tendon is injured.

The sanity of tetanus reveals an important systemic law designed to preserve the system rather than to destroy it. In allowing the air to come in contact with the wounded tendon causes an exceedingly painful inflammation. This excessive pain causes the bold herculean effort to relieve suffering, and to restore the part. The irritating cause being continuous, throws the muscles into a state of partial, or complete, rigid contraction that the will cannot control, as the exciting cause continues. The dermoid tissue (or skin) is given to protect the internal tissues from the caustic effects of the atmosphere, which is one of the most exciting causes of pain to an open wound. If tetanus should occur from neuralgia in the dental nerves, it is called *trismus* or *lock-jaw.* If it occurs from neuralgia of the womb, it induces contractions of the muscles of the back, called *opisthotonos.* If the contraction is upon the anterior muscles of the spine, it bends the person forward, and is called the *emprosthotonos.* Tetanus is called *complete* when the greater number of the voluntary muscles of the body are contracted. In this case, the flexor and extensor muscles antagonize each other, so that the body is not bent in either direction.

The danger lies in not supporting the nervous system suita bly to relieve it from this diversion, before the vital nerves become exhausted by it. Seldom do we meet with a case of inflammation of the internal psoas muscles to induce the for ward flexure called *emprosthotonos* tetanus.

The suppuration of the injured tendon is the point that most surgeons fix upon as the cause of tetanus. If this is the case, what causes it when it is not of the traumatic order wherein no tendon has been injured? Damage to a muscle is a cause of ordinary cramp in the lower limbs. By overworking a muscle, leaves it in an excitable state, that is easily thrown into a state of cramp by stretching, after they have been relaxed by sleep.

The cramp from cholera always follows an unendurable pain in the extremity thus spasmodically contracted. The direct cause, therefore, is painful inflammation of a tendon or aponeurosis of a muscle. The more dense the inflamed structure, the more acute is the pain; consequently, it requires as dense

a structure as these fibrous ligaments, to induce a pain sufficiently intense to command this intense motor nervous circulation to the muscles, independent of the will, manifest in tetanus.

The treatment indicated consists in controlling the pain by the use of hyoscyamus in doses of four grains each, every three or four hours, until the spasmodic contraction subsides ; then give grs. j, sufficiently often to control the pain.

In case of wounds of fibrous ligaments, tetanus may be prevented by speedily excluding the air from the wound by bringing it to perfect suture, and securing it in position with adhesive straps, used in surgery ; using the precaution to perfectly exclude the air. If tetanus is caused by severe neuralgia, the treatment is the same ; control the pain, and in due time the symptoms will subside. In urgent cases, a dose of hyoscyamus should be given every hour, until the cramp subsides.

CHOREA,

OR ST. VITUS DANCE.

This disease appears to manifest a perverted action of the motor nerves of the upper extremities. The hands of the patient are almost continually in motion, and, in the attempt to use them, many false motions are made that are so ludicrous as to annoy the patient more than any unpleasant sensation that arises from the disease, or any derangements that proceed from it. But a few nerves have a given service that are not at the command of the will. God has reserved all but the motors, to serve the fiat of His grand systemic design in directing all its vital relations necessary to construct and recuperate the system. All the remainder are at the service of the individual mind as servants that wait for orders. When in a healthy state, they are endowed with all the capabilities to instantly obey ; but none to resist the will. All of the muscles bound into action at the mandate of their lord and master, the will ; (as these serve the will, so should the soul serve God).

The motor nervous centers connected with the sixth and seventh cervical and the first dorsal vertebral centers appear to be deranged, but the lesion is most probably of cerebral origin. The evidence in support of this opinion is derived from the fact that the movement is often opposite to that designed by

the will; the extensor in place of the flexor, and vice versa, often obtain. The confusion appears to be at the source of motor fibrillæ of these nerves. If the motor effort is started on a flexor fibril at the brain, it cannot change in the transit. The external portion of the brain is cortical, and the internal, medulla. From the cortical, all fibrillæ arise, and these fibrillæ are in contact with and are supported by the medulla in their functional work. The cortical and medulla bodies are as sectional as the branches of nerve fibrillæ that emanate therefrom. In a case of hemiplegia, or paralysis of one side, the whole anterior hemispheral fasciculæ have, to a degree, lost their subdivisional boundaries at their sources, or it would appear that the accumulating medulla has lost an atom out of its chemical formula which disqualifies it for generating a receptive motor element. The nutritive agencies are not lost in the vital nerves that support the cortical portion of the brain; therefore the fault must lie at the source of the section of cortical fasciculi that furnishes ground for misplaced fasciculi that induces misdirected motor action.

Fatal results seldom attend this disease. By a careful course of treatment, it generally subsides in a few weeks.

TREATMENT.

℞ First, give a solution of nitrate of potassa, fifteen grains in one-half tumbler of cold water; take one tablespoonful every hour, until it is all taken; then at bedtime take two one-half grain sugar-coated podophyllin pills. Then use the following: Fluid extract of dandelion one fluid ounce, fluid extract cypripedium one ounce, fluid extract of gentian one-half fluid ounce, tinct. of wintergreen one drachm; add six ounces of sugar syrup. Dose, one teaspoonful every three hours during the day-time. Also at the same time, use Fowler's solution of arsenic, three drops four times per day; dilute each dose in a teaspoonful of cold water. Continue this treatment until the patient is fully relieved. Not in a single instance has the author known this treatment to fail to give full relief.

MEASLES.

This is a contagious disease, yet not unfrequently it is epidemical. A person is not liable to contract this disease a second time.

From ten to fourteen days after exposure, constitutes the in-

cubative period. The first symptoms are chilliness, congestion of the palate, fauces and trachea, inducing a high fever and a dry, tight, troublesome cough. The eyes are swollen and suffused with tears, there is a hoarseness and not unfrequently sore throat; the fever runs high, and the patient is very thirsty; and from three to five days the eruptions, like flea bites at first, beginto make their appearance, and subsequently spread into irregular red patches. They appear at first in the roof of the mouth, then on the face and forehead, neck and chest, and finally over the whole body and extremities.

When the eruptions are long suppressed, symptoms of pneumonia are very apt to accompany this disease, which, when manifest, must be promptly subdued by treatment under that head.

The immediate cause is membranous congestion. The mediate is glandular obstruction, and their secretions turned into the circulation to obstruct nutrition, and general membranous congestion follows.

The remote cause is contagion, contracted of a person laboring under the disease. This disease may be primarily induced in crowded rooms, where they are compelled to remain a long time, as on board ship, and in military barracks, by inhaling the atmosphere overcharged with carbonic acid gas exhaled from the crowd. This poisonous acid is carried into the circulation, the kidneys become inflamed by it, while in the act of depurating it from the blood. When this is long continued, the kidneys become obstructed, and send their secretions into the circulation to find depurative escape from the system through the dermoid membrane, and, in the effort, this membrane becomes congested and inflamed to an extent that effusions occur to induce the irregular scarlet patches on the external skin.

The indications of cure are to relieve the obstructed glandular organs, and ventilate the system of the impure glandular secretions inthe circulation; to moderate the fever and nutrition will be restored, and the skin relieved of this unusual burdensome task to save life, while the glandular organs to whom this depurative work is assigned are disqualified to perform their functional work.

TREATMENT.

Begin the treatment by giving colocynth grs. x, nitrate of potassa grs. xx, in cold water ℥iii. Dose, ʒii, every one-half hour, and in six hours give 1½ grains of podophyllin, and repeat the twenty grain solution of nitrate of potassa the second day. After the podophyllin has operated well, give the following:

℞ Fluid extract of spice bark (benzoin odoriferum) ℥ss,

fluid extract of saffron ℥ss, fluid extract of rhubarb ℥i, simple syrup ℥iv; mix. Dose, ʒi, every hour, if it does not prove too laxative; in such case give the doses once in two hours, and substitute three grains of cholera infantum powders every two hours. Continue this treatment until the measles have turned, which is usually on the fourth day. This is the critical period to guard against fatal venous congestion by keeping up a gentle perspiration. The introduction of milk punch while passing this critical period is advisable to make doubly sure this point.

MUMPS.

This disease is known by an enlargement of one or both of the parotid glands. A very common test is to take some sour article into the mouth. If it be mumps, the affected gland or glands will be thrown into intense pain, by the effects of the acid upon them. A fever more or less intense corresponding with the degree of congestion these glands obtain. Persons of all ages are subject to contract this disease by being exposed in the presence of one who is suffering from it.

The disease runs much lighter with persons under the age of puberty. All the invasive symptoms are also augmented by the effects of a cold recently contracted while the incubative work is encroaching upon the vital and functional nervous centers that support these glands. It is often the case that persons in good health may be exposed several times before acquiring the disease. Again one side may pass through its stages before the other side becomes affected, or it may pass to become affected on exposure at some future time. *Metastasis*, or a transfer of the swelling from the parotid glands to those of the testes, sometimes occurs with males after the age of puberty, mostly due to inefficient treatment of the kidneys and liver, so as to give an early and prompt relief to all the glands in the system. With this aid to nutrition, the symptoms will be light, and no fears of metastasis need be apprehended.

The time limited for contracting the disease is claimed by authors to be within the first four days. Begin the treatment by the use of nitrate of potassa grs. xv, water ℥iv. Dose, ʒiv every half-hour until it is all taken. After using this solution three hours, give sugar-coated half-grain podophyllin pills, four at a dose. After the pills have operated well as a cathartic, use the following: Ex. hyoscyamus grs. xx, T. wintergreen ʒii,

nitrate of potassa grs. xxx ; dissolve in water 1℥; f. ex. rhubarb ℥i, T. bloodroot ʒi, f. ex. burdock ℥i, f. ex. marsh rosemary ʒii, simple syrup ℥iii; mix. Dose, one ʒ. Take such a dose every hour for three days, then four doses per day for three days. In case of a metastasis to the testes, apply the spinal liniment to the parotid glands, and foment the swollen testes with cloths wrung out of hot water, until the swelling subsides. When the patient is free from the swellings, great care not to take a cold need to be observed for several days.

CHOLERA MORBUS,

OR, ACUTE DIARRHŒA,

Is caused by the use of unripe sour fruit or food undergoing vinous fermentation. When a law of dietetics becomes thus outraged by forcing into the circulation large quantities of acid dangerously detrimental to nutrition, the systemic powers feel the shock, and rally an undue force through the functional nerves that support the depurative work of the glands, to rapidly absorb the redundance of this acid from the circulation ; and when vinous fermentation occurs in the stomach, as soon as it is sent forward as sour chyme, the mesenteric glands and intestinal exhalents conspire to prevent it from passing into the chyliferous circulation by rapidly hurrying it through the intestinal canal. The villi of the mucous membrane become buried in a coat of thick mucus that prevents the sour chyle from being carried into the chyliferous circulation to inflame the lungs in its passage into the arterial circulation, to impede nutrition in the brain, and congest the whole systemic capillary system. To expel this sharp acid from the system without entailing this mischief upon it, is this phenomenal systemic undertaking. But the mucous membrane of the intestinal canal is without protection, save from judicious medication to prevent, in severe cases, the exhaustion of the serum of the blood. The occurrence of the cramp is an evidence of a rapid approximation to this dangerous condition.

The indications of cure are, to neutralize the acid, to stimulate a nutritive nervous rally to the mucous membranes to overcome the congestion, and to overcome the excessive irritability of the system by the use of anodynes. The attack is usually very sudden, and attended with fainting, vomiting and purging, with passages of gas. The passages are copious, fluid,

frequent, and discharged with great force. To allay vomiting, give nitrate of bismuth grs. x, in a tablespoonful of water, and repeat the dose directly after each fit of vomiting, and if needed for three doses. Also, give bi-carbonate of soda ʒss, water ℥ii, T. opii. m. xv, nitrate of potassa grs. x, T. pepermint m. v. Dose, ʒiv, to begin with; then give ʒii every fifteen minutes until it is all taken. Likewise, give T. of xanthox ʒi, in water ʒiv, for a dose; give such a dose every fluid passage of the bowels. If the bowels are painful, wring a towel out of hot water and lay over the bowels as hot as can well be borne, and change them every four or five minutes until the pain subsides. If the passages assume a rice-water appearance, and are frequent and copious, give the following enema: T. xanthox ʒii, T. opii. m. xx, tepid water ʒii.

Second mode of treatment, see "Cholera Specific, and its mode of use for a case of cholera morbus." To allay the thirst use scorched wheat bread crust toast water.

A third mode of treatment has proved to be so very efficacious that I insert it: ℞ F. ex. marsh rosemary root ʒvi, bi-carbonate of soda ʒss, T. xanthox berries ʒiv, nitrate of potassa grs. x, T. peppermint m. viij, T. opii m. xv, water f. ℥iii. Dose, ʒi every fifteen minutes until the vomiting ceases. Then give a dose every time the bowels move in a fluid state. This last treatment fulfills all the indications admirably, and leaves the system free from fever, and the mucous membranes from any chronic inflammation. This preparation is very harmless, and in very urgent cases the doses may be doubled, or even trebled, until the urgent symptoms begin to subside.

CHRONIC SOUTHERN DIARRHŒA.

The emaciation to which the patient is reduced in this disease is due to a chronic inflammation of the mucous membranes of the small intestines, that prevents chyliferous absorption, and every order of food or drink taken is rapidly hurried through them. This inflammation is usually extended to the mesenteric glands, which become tumid, and often break down by abscess. One of the peculiar features of this diarrhœa is its periodic habit, which occurs regularly at about four o'clock A. M. At this time a very large passage occurs. The pulse is small and frequent. The urine is scant and high-colored, evincing more or less obstruction of the kidneys by a chronic inflammation, rendering their functional work deficient, and thereby the blood is rendered less nutritious, and as chylosis is greatly impaired, renders a rapid systemic decline inevitable. The appetite is poor and the tongue red. A slight chill precedes the passage of the bowels in the morning, that clears the liver like a portion of jalap; at other times of the day

the passages are small, and dependent upon the quantity of food and drink taken.

The intermittent symptoms in the case, and the perpetuating cause of the diarrhœa, are directly due to an overflow of renal secretions into the circulation, which are secreted by the pancreas and liver from the blood, and evacuated through the intestinal canal. The pungency of this urea in the bilious passages each morning repeats the injury received by these intestinal mucous membranes. The poor success that has attended the treatment of this disease in our military campaigns has been due to an oversight in our pathologists to direct proper attention to this renal obstruction as its producing and perpetuating cause. The author had a favorable opportunity to demonstrate the correctness of this point, in his great success in the treatment of a great number of our soldiers who returned from the Mexican war emaciated with this diarrhœa, but then called the Mexican diarrhœa; and during the great rebellion his success was equally satisfactory to place his views upon the pathology of this disease beyond question.

Good judgment is required, and close observation very important, to select the most potent remedies to fill the indications, and so carefully direct the quantity of doses to insure steady progress in the very low cases we are frequently called to treat.

TREATMENT.

To relieve the chronic inflammation of the mucous membranes of the bowels: ℞ Prickly ash bark of the root 2 oz., marsh rosemary root 2 ozs.; boil thoroughly and strain off f. ℥ iv. To clear the albuminous obstructions in the ducts of the kidneys, add nitrate of potassa grs. xv, and T. of wintergreen ʒii. Dose, ʒj every hour until the diarrhœa subsides. To overcome renal inflammation, and insure their functional activity, also to give a proper support to the nervous system: ℞ Sweet spirits of nitre, army strength, f. ℥iv, quinine grs. 40; mix. Dose, ʒiss, diluted water ʒiv; give such a dose every two hours for two days; then give ʒi diluted every three hours for two days more. After this, if the patient seems to bear the tonic well, give a dose every four hours until the patient is convalescent. To give rest and to allay the nervous irritability of the system, give the cholera infantum powders grs. iii, every two hours. After two days' treatment, to aid the liver in secreting healthy bile, and enable the patient to better bear the tonic effects of the quinine, give at bed-time a quarter-grain sugar-coated podophyllin pill. No other alterative will as safely and effectually fill the indications in this case needed as the podophyllin, which are to secure gentle glandular action, and the relief of

membranous congestion. Repeat the use of a quarter-grain podophyllin pill as often as every third night, if the bowels will permit. Apply the spinal liniment the whole length of the spine once per day. When the hips or feet become cold, apply heated bricks wrapped in cloths, to them.

DIET.

For a few of the first days use arrow root gruel, soaked soda crackers and butter, gelatin or mutton soups, seasoned to suit. Drinks: white of one egg beaten and put in a half-pint of cold water. Use when thirsty. Also, give toast water made by scorching well crusts of wheat bread, made still more alkaline by dipping a few live wood coals into the water before it is poured on to the toast.

Give good blackberry or port wine ℥ii once in three or four hours, just before giving food. If the patient complains of pain in the bowels, apply cloths wrung out of hot water, and change them every five minutes until the pain subsides.

Exclude everything sour from drinks and diet.

SMALL POX.

This is a contagious and infectious disease. It is very unpopular, and one that is very poorly understood by the majority of physicians.

Small pox, like measles, is an eruptive fever, propagated by contagion running a definite length of time in its course, and as a general rule, to which, indeed, the exceptions are rare, but generally affecting persons but once in the course of life. Its origin is lost in antiquity, and the common opinion is that in these days it never arises except by contagion; yet, there is reason to believe that under an exceedingly unfrequent concatenation of causes, it may be engendered. It must have originated, in the first instance, from common causes, and it would be strange if the causes that gave rise to it then can never now recur.

Long dissertations have been written on this disease, which for so many ages was the scourge of communities, and which, when it did not prove fatal, left the most unpleasant traces behind it, disfiguring the face of beauty so that the former traits could be scarcely, if at all, distinguished; but it has become of somewhat less interest since the introduction of

inoculation and vaccination, and few opportunities occur for witnessing it in country practice.

The most convenient divisions of small pox are into the *distinct*, the *confluent*, and the *modified.* Other divisions have been made by writers, but they are not necessary, and are apt to create embarrassment.

1ST.—DISTINCT SMALL POX.

Before describing the symptoms of distinct small pox, it may be remarked that in all the forms and varieties four stages may be distinguished: first, that of incubation, in which the virus is at work in the system and doing its work of inflaming the kidneys and deranging the skin, and most of the organs in the system.

I think it important that the disease should be well understood, in order to guard all who have been exposed to its contagion against its occurrence by terminating the work of the contagion on the system at once, by nipping the incubative work upon the system in the bud, by a specific preventive.

I will give in this place the formula for the proper preventive, which should be used by all persons as soon as possible after being exposed to this contagion, viz: Nitrate of potassa gr. xxx, salicin gr. xxx, T. xanthox ʒvij, water f. ℥iv; mix. Dose, ʒss four times per day. Keep the liver open by giving podophyllin, gr. ¼, every second night.

This treatment should be begun within five days after exposure, and continued twenty days. Then the patient need have no fears of its occurrence, for this remedy will hold the organs it attacks in that state of health, rendering it impossible for the disease to make any progress of incubation in the system.

This formula is also a perfect specific to be used in all cases when the disease has reached the eruptive form, and during the whole time of the disease. If the patient is kept in a darkened room, the desquamations will not disfigure the patient if this remedy is used, and under its use the disease will always be distinct and light. Use the prescription for the incubative stage in all its stages.

The following doses should be given: To an adult, after the disease has broken out, give m. xiv, in sweetened water ʒj; use such a dose ten times per day, that is, during the twenty-four hours; give a dose once in two hours up to four o'clock a. m.; then let the patient rest until eight o'clock a. m. Continue its use thus for four days; then take four doses during the day time for twenty days.

All who are using this preventive should abstain from the use of all acids, hot cream-of-tartar biscuits, hot bread, hot griddle

cakes, fried eggs and meat, nor use any alcoholic drinks.

The second stage is that of the eruptive fever.

Thirdly, that of maturation.

Fourthly, that of decline, dessication and secondary fever.

The stage of incubation is the period between the reception of the poison into the system, and the commencement of visible signs of disease. It is the latent period, and does not differ from that of other eruptive fevers which are produced by a specific contagion.

After the reception of the miasma, there may be many days before the eruptive fever; the premonitory signs become at times marked, and the patient is languid and listless, with more or less disorder in the kidneys and the digestive functions.

The duration of the period of incubation, when the disease is taken naturally, varies. The usual time is twelve days, but it may extend from seven to fourteen days. Usually on the eleventh or twelfth day from the reception of the poison into the system, the eruptive fever declares itself, and, almost always, by rigors, followed by the train of symptoms which usher in the measles, and which do not, therefore, require repetition here. It may be remarked, however, that the signs of great prostration of strength are decided; that the expression of the countenance is anxious; and that in cases where the constitution is delicate, the debility amounts almost to a collapse. The period at which the eruption appears is tolerably fixed. Almost always it is seen at the end of forty-eight hours from the commencement of the eruptive fever, whatever may be the character of the disease, that is, whether distinct or confluent. This period may be lengthened, by weakness of habit, loss of blood, long-continued vomiting, or extreme cold; but so far as the experience of one who has had large oppotunities goes, (Geo. Gregory), it is never shortened.

The eruption is generally completed over the whole body in one or two days, but it may extend through double this period. Minute pimples, sensibly elevated above the skin, first show themselves on the face and forehead, the nose, the chin and the upper lip; afterwards they are seen on the neck and wrists, and subsequently on the trunk and limbs, the feet being always implicated last.

In case of distinct small pox, the fever is greatly relieved on the appearance of the eruption.

When the eruption first appears, the pimples are separated and surrounded at their base by a red areola, and when they are numerous, it is difficult to decide whether the disease be small pox or measles. The difficulty does not continue long, however, for the pustules become more and more elevated, and the true character of the disease is manifest.

The stage of maturation of the pustules succeeds to that of the eruptive fever. In the first and second days, the eruption is papular, but about the third day, the tops become vesicular and transparent, and on the same, or next day, the pustular character is marked, and suppuration has commenced. The pustules have now acquired some size, and their tops present a a flatness, followed by an umbilicated depression. This is perceptible from the third or fourth day, and becomes more marked as the period of maturation approaches. The pustules present a whitish appearance, and are surrounded by a red areola. The umbilicated depressions are readily seen on isolated pustules, but when they coalesce, or are in groups, they are rarely perceptible. On the eighth day from the appearance of the eruption, the suppuration is at its height, but as the pustules of different parts of the body do not appear simultaneously, three or four days may elapse before some of them attain a maturity. Those on the face and neck generally acquire their full size first, and discharge their contents; next those on the trunk and upper extremities, and lastly, those on the feet.

Simultaneously with the appearance of the pustules on the skin, they may be observed on the mucous membrane of the lips, on the tongue, palate, interior of the cheeks, &c.; but it has been questioned whether they are ever seen lower down, although it has been affirmed that dissections have exhibited them throughout the whole track of the intestines. They are not unfrequently seen on the eye, and the author has met with more than one case, in which loss of sight was occasioned by them; but of the variolous inflammation of the eye, he has treated elsewhere.

The seat of the variolous pustule is the cutis vera. Beneath the epidermis, a disc of a consistence like pulp or thick mucus, a pseudo-membranous secretion, exists, and the vesicle containing it is found to be multiloculous.

The constitutional symptoms, during the stage of maturation, vary greatly in intensity, and this usually in a direct ratio with the number of the pustules. When they are very numerous, the fever may be high and the local irritation considerable. Frequently there is a great tenderness of surface and itching; the face is often swelled, and the eyes closed by the tumefaction of the eyelids, immediately before the entire maturation of the pustules, and the swelling of the hands is often a source of great inconvenience. Ptyalism also occurs at times to a considerable extent. This has been regarded as salutary, but it is considered by others to be an inflammatory process, occasioned by the existence of the pustules, and may, according to M. Andral, be attended with disagreeable consequences. Such a case the author has not met with.

On the eighth day from the appearance of the eruption, it begins to dry up, after the bursting of the pustules, and scabs form, which, under favorable circumstances, fall off in the course of four or five days. This is the stage of desiccation or decline. By the fourteenth day of the eruption, the fever has generally subsided; the swelling of the face has diminished or disappeared, and the encrustations have fallen off from the face and upper parts of the body; but the surface of the skin, especially that of the face, is left of a reddish brown color, and where ulceration has occurred, it may be pitted. The discoloration sometimes continues for months, and the pits remain for life. Thus is the ordinary course of the distinct form of small pox.

2D.—CONFLUENT SMALL POX, OR VARIOLA CONFLUENS, VARIOLÆ REGULARES CONFLUENTES.

In this variety of small pox, all the precursory symptoms are more severe; the eruptive fever runs much higher; the regular progress of inflammation is interfered with by the immense quantity of papulæ, which occupy the skin, and the inflammation extends to the subjacent cellular texture; the mucous surface of the mouth, pharynx, larynx and trachea are, also, the seats of the eruption, and it has been seen in the mucous membrane of the rectum. The nervous system is greatly implicated; the fever continues, and even increases in violence after the appearance of the eruption, and its decline is attended with secondary fever, which appears to be the fever of recuperation, and occurs chiefly in cases where the cellular membrane over the body has become extensively involved with the skin in the inflammation.

This form of the disease is characterized by hot and dry skin, white tongue, rapid pulse, sleeplessness and unquenchable thirst, and is very apt to be complicated with some important affection of a part of the economy as exanthematous, pustulous and other affections of the skin, superficial abscesses, opthalmia, encephalic, thoracic or abdominal mischief, &c. Like measles and scarlatina, it is also liable to develop scrofulous and other taints, so that its sequelæ are, at times, most distressing. Throughout the whole period of maturation and disiccation, there is a disagreeable odor from the body, which is quite characteristic.

Although in many cases the inflammation and irritation of the skin are so violent as to induce great febrile irritation, at other times, owing most commonly, perhaps, to deficient power in the system, the eruption is imperfectly developed, and instead of filling and proceeding favorably to maturation, the pustules remain flat, and contain but very little fluid. The accompanying fever is, in many of these cases, markedly adynamic, and certain of them put on all the characters of con-

gestive fever. The strikingly adynamic character of the fever, and the appearance of the skin, resemble so much petechial typhus as to render the term petechial small pox, which has been given to this form of the disease, not inappropriate. The pustules themselves fill, at times, with a bloody ichor, so as to give occasion to the term *variolæ nigræ*, sometimes applied to it. The appearance of the pustules has, indeed, suggested numerous subdivisions of variola by different authors, but they do not seem to be of any practical utility, whilst they cannot fail to embarrass the young inquirer.

It is generally sufficiently easy to diagnosticate small pox, except during the first day of the eruption, when it may resemble measles or febrile lichen. A short time, however, is sufficient to remove the uncertainty, and prior to this, the existence of small pox may be suspected from the fact of the person having been exposed to contagion, and his having had measles previously.

The danger of the disease depends greatly on the extent of the eruption, and the implication of the mucous membranes. Distinct small-pox very rarely proves fatal; whilst confluent small-pox is full of danger, and proves fatal at times, by the supervention of internal mischief, when everything has seemed to be going on favorably. When the mucous membranes, and especially that of the larynx, are much affected, the danger is great; hence, hoarseness, at an early period, is always unfavorable. The appearance of the mouth and throat will afford some index as to the probable state of the larynx and trachea. A natural tone of voice is a good omen, even although the eruption be confluent, with a disposition to cellular inflammation.

It need scarcely be said that the symptoms of typhus prostration exist; when an altered and putrescent condition of the fluid obtains, the prognosis must be unfavorable.

Small-pox is more dangerous to very young than to old persons. It has been affirmed, indeed, from the result of observation, that persons above forty years of age rarely recover, even from severe confluent small pox. The most favorable age would appear to be from the seventh to the fourteenth year, when the powers of life are in full vigor, without the risk of plethora. Plethora is, indeed, as unfavorable as great constitutional debility.

In very severe cases, the fatal event takes place before the eighth day; and more commonly it occurs between the tenth and seventeenth days. Prior to the introduction of vaccination, the deaths by small pox were to the total deaths in town or country, in the ratio of 16 to 100, or about one-sixth of those attacked. The average mortality is usually stated at one in four;

but the numerical method has not been extensively and vigorously applied here. It seems to vary in different places; thus, the mortality from primary small pox in London has been estimated at 36 per cent.; whilst in Germany, it is only 20 per cent.

Even now, it would appear—when accurate statistical accounts are taken by the Registrar General of England—that in 1837, there were only five diseases more fatal in England, and that the deaths throughout England and Wales amount to about 12,000 annually.

At times, during particular epidemical influences, the mortality from small pox is terrific. A modern writer (*Mackintosh*) affirms that he had occasion to attend fifty cases of small pox, all of which were distinctly traced to the imprudence of a woman, who exposed her unvaccinated child to the contagion when visiting a sick friend. Of these fifty patients, thirty-five had gone through the process of vaccination; fifteen had never been vaccinated—they were infants under one year of age. All the protected cases recovered. Of the fifteen unprotected, ten died, and three only of the fifteen had the disease slightly. Of the five children that survived the attack, one did not recover perfectly, and died of chronic bronchitis some months afterward.

Causes.—It has been already remarked that the mode of propagation of small pox is by contagion. The sporadic origin, if it ever occurs, must unquestionably be rare. The disease may be communicated to one who is unprotected—that is, who has never had it in the natural way, or by inoculation, or who has not been vaccinated. It may be induced by a miasm diffused in the air, or by positive contact of the variolous matters, or by inserting it under the cutis—in other words, by *inoculation.* It has been affirmed that the contagious character is developed during the suppuration of the pustules, and is preserved until their desiccation, and that the disease is not communicable during the eruptive fever, and the two or three succeeding days; but experience appears to have shown the inaccuracy of this opinion, and that there is no safety after the manifest appearance of the disease.

The scabs retain the contagious power for a considerable time; and it is affirmed that a confluent case of small pox will taint the air and spread the disease for at least ten or twelve days after death.

The contagious miasms can attach themselves to clothing; and, if air be excluded from these formites, they may communicate the disease for a long period afterwards. Such is the view entertained, and it is probable. There can be no doubt, however, that a free ventilation will prevent this; for the author

has never met with a case in which the practitioner has been the agent of conveying the disease from one house to another.

The circumstances that give occasion to an attack of confluent small pox in one person, and of the distinct kind in another, from exposure to the same contagion, are totally unknown. Certain it is, that the same matter will produce both forms in different individuals; nor would it seem that the matter of the confluent pustule is more likely to induce the confluent form than that obtained from the distinct pustule. The form of the disease appears to depend upon constitutional differences that are unappreciable.

Like other contagious diseases, this is epidemico-contagious. In other words, it does not rage at all times alike. Before inoculation or vaccination was introduced, it visited epidemically the same region after uncertain periods; and one of the strong objections urged against inoculation, was the fact, that as natural small pox could be communicated from the inoculated, the introduction of inoculation kept the disease always in a community, and that hence the mortality from small pox was absolutely increased after the introduction of inoculation, although the ratio of deaths in those attacked was diminished.

The greatest epidemics in recent times, in England, have been in 1781, 1796, 1825, and 1838.

Seasons and climate are devoid of influence over it.

Small pox attacks both sexes and all ages; and, like measles, it may affect the fœtus in utero. The cases of this kind on record are very numerous. (*Duttel*, *Fabricius*, *Hildanus*, *T. Bartholia*, *Fernelius*, *Hoogeveen*, *Jenner*, *Mauriceau*, *Van der Wiel*, *Van Swieten*, *Mead*, *Rosenstein*, *Ploucquet*, *Hunter*, *Billiard*, *etc.*) In many of them the mother was unaffected.

All persons are not equally susceptible; and the susceptibility appears to vary at different periods. A physician may, for example, pass through a long life, attending to many cases of it with impunity, and yet may, ultimately, take the disease naturally or by inoculation. It rarely affects the same person more than once; so rarely, that the proportion has been estimated at not more than one in fifty thousand.

ASCITES,

OR ABDOMINAL DROPSY.

This dropsical state of the abdomen may be determined from plethora by the fluctuation of the water when placing one

hand upon one side of the abdomen and cuffing the other side with the other hand. If it be a body of water, a wave will beat against the quiet hand at each blow of the other hand.

This dropsical state is most usually induced by obstructed portal circulation. Whenever the portal circulation of the blood through the liver is impeded to an extent that the venous accumulation exceeds that of the portal transfer, a backset occurs in the portal reservoir and all the mesenteric veins, which causes the abdomen to become very tumid at first, which finally induce so much venous extension as to cause an effusion of the serum through the meshes of these mesenteric veins, in quantity equal to the excess of the accumulation to that of the portal transfer. This difference is seldom very great, but by the obstruction remaining continuous, the accumulation is inevitable, and finally the accumulation of water in the abdomen becomes observable. As obstructed renal organs usually precede liver obstructions, we find in this case that the urine is scant, and sometimes suppressed. Bowels constipated, and appetite very poor.

There are other sources of abdominal dropsy, as the exudation from an encysted tumor; but their unfrequency are as one to ten referable to portal obstructions. Of these the ovarian tumors are the most common. The impediment to the passage of the portal blood through the liver is due to distended biliary ducts that encroach upon the capillary transit veins, that narrows the channels of some, and wholly obstructs others. There are two orders of biliary duct obstructions. One is plethora of bile, caused by a closure of the duodenal passage of the ductus choledochus. The other, yet of less frequent occurrence, is induced by dense accumulations of concrete albumen in the capillary biliary ducts. This concretion is constantly packed to the distension of these ducts by the constant peristaltic effort to clear them.

To provide against these obstructions, the liver becomes tumidly enlarged by the force of the portal plethora, and to provide for keeping open the channels of its transit capillary circulation. When this distension of the liver for enlarging the circulatory channels, and vena portarum, for reservoir, have reached their greatest capacity, and the lymphatic absorbents become unequal to the task of disposing of the redundant serum, dropsical accumulation becomes inevitable.

The systemic energy conscripted to this effort to sustain these plethoric vessels, and to support the undue activity of the lymphatic absorbents, is detrimental to renal activity, and the usual systemic support distributed to other vital organs. Digestion and nutrition fail to keep up the tone of their departments, and the muscular fibre wanes in calibre and energy.

This is the routine of the general systemic decline in a case of this order of dropsy.

The indications of cure are, to remove all obstructions from the renal and biliary ducts, to render efficient aid to these glandular organs to ensure functional action, and give a proper support to the nerves of nutrition. By thus removing the cause of the dropsical accumulation, the lymphatic absorbents will gradually absorb the dropsical water from the abdomen.

TREATMENT.

Begin the treatment by attending to the inactivity and obstructed state of the renal organs. ℞ Nitrate of potassa grs. 60, f. ex. uva. ursi. f. ℥i, f. ex. prickly ash ʒiv, f. ex. of hyoscyamus ʒii, T. of wintergreen ʒii, f. ex. of wahoo f. ℥i, water f. ℥iv, f. ex. blood root ʒi; mix. Dissolve the nitrate of potassa in the water first; then add all. Dose, ʒi, diluted in water ʒii. Take such a dose every hour the first day up to bed time. The second day give a dose every hour and a half; then at bed time give podophyllin grs. ii, and repeat the podophyllin if it does not clear the liver by the next night. Continue the diuretic formula, a dose every two hours, to keep up the activity of the kidneys. If the quantity of wahoo in the prescription shall be sufficient to keep the bowels quite lax, after taking the podophyllin, very well, continue it; if not, take enough of the fl. ex. of wahoo in ½3 doses, diluted in ʒiv of water, daily, to keep the liver and bowels open while the dropsy lasts.

Also, after the bowels have moved as a hydragogue cathartic, begin the use of salicin grs. xv, water ℥ii. Dose ʒii. Give such a dose every one and a half-hour. Apply a stimulating liniment to the spine once per day. It is very important that this treatment be bold enough to ensure a success in thoroughly opening the kidneys and liver. Then afterwards judgment should be used to graduate the doses and time of doses, so as to only secure standard glandular action, until the dropsy subsides and the glandular system is able to perform its functions without aid.

When the lesion lies in an obstruction of the duodenal passage, and the skin becomes tinged yellow by overflow of bile, in such a case the proper and only safe course to pursue in the undertaking to open the duodenal passage is to administer a prompt lobelia emetic, after using the diuretic formula advised for two days. If the emetic fails to open this duodenal passage, it should be repeated once in twenty-four hours until bile becomes thus ejected. Then afterwards the liver may be kept open by one-grain doses of podophyllin, repeated at intervals of from three to five days apart. The objection to the use of the podophyllin in this case is, it will cause an increased secre-

tion of bile, while it may fail to open the duodenal passage; if so, an increased plethoric distension will obtain in the biliary ducts, the lobelia being more reliable to open this passage, while it does not increase to so great an extent the secretion of bile.

APOPLEXY.

The patient, when attacked with a fit of apoplexy, becomes suddenly paralyzed, unconscious, and lies in a deep, snoring sleep.

Paralysis of the tentorium, and an undue influx of venous blood in the longitudinal sinus to press heavily upon the organ of consciousness, appears to be the condition of the patient. From the prostration the system sometimes receives from exhausting labor, the tentorium loses its ability to prevent the person from passing into a deep state of unconsciousness, manifest by snoring. But as the vigor of the system recuperates by rest, superficial sensitiveness augments to make the tentorium sufficiently tort to disperse the blood in the longitudinal sinus, and to raise the brooding pressure from this portion of the brain, and the full, conscious, wakeful state obtains. These two states are analogous. The apoplectic state is a sleep unto death, in the majority of cases, while recuperative rest will secure the means of conscious wakefulness to the laborer. From the prostration the external membranes receive from continued fevers, is the cause of *coma*, which is a subsidence of external sensation, the means of consciousness. The author was called, in 1853, to see David Foy, of East Randolph, N. Y., who had been under treatment thirty-two days by another physician, for typhoid fever. The patient was in a state of coma, and the friends were called in to see him die, one of which, being dissatisfied with the course of treatment, made the call. As low as he had waned to reach this unconscious state, a proposition was offered for the friends to retire, and an effort would be made to arouse the patient to a state of consciousness. The patient was washed all over with a strong tincture of capsicum, and an enema of the same, diluted four times with tepid water, was found necessary before the patient began to manifest any signs of returning consciousness. A piece of woolen cloth was dipped in a solution of salt as much as the water, when hot, could dissolve; then the cloth was dried, thus making a rough chafing cloth. By chafing with

this cloth, after the external bathing and enema, in the course of twenty or thirty minutes he became conscious enough to recognize his friends, but was disposed to sink as soon as the chafing was suspended; consequently it was continued. As soon as he could swallow, began to give the spirits of nitre and quinine tonic, and a little diluted tincture of capsicum. By pursuing this course to hold the consciousness for twenty-four hours, he was entirely relieved from this state of coma, and the patient speedily recovered. A Mr. Baily, and a daughter of Willard Ransom, were also saved from similar states of coma by this course of treatment by the author. By reason of what analogy exists between coma and apoplexy, these cases, and the success that followed these efforts to call back the lost state of consciousness, these cases have been referred to as the most proper course to pursue to restore the apoplectic patient to a state of consciousness. If this course will not make any favorable impression, add to it blood-letting from the arm, and use a warm bath, with a quantity of capsicum steeped and added to the bath. The case is considered hopeless when these efforts fail. It is an admissible fact that a cranial depression will induce a state of unconsciousness, but as no cause of encroachment from that quarter is apprehended, it is to be looked for elsewhere. In a child it may be suspected from a knot of worms, which, when made to scatter, relieves the patient at once.

DIABETES.

This disease is most generally due to a tumid or hypertrothied state of the kidneys. In this state the nerves become enlarged and rendered morbidly or acutely sensitive in their plexus roots. In this case the spine is always inflamed at the seat of this renal plexus. The systemic nervous relief sent through the renal plexus to recuperate this inflamed portion of the spine, causes undue activity in the renal functional nerves that center in the renal plexus. This undue nervous force, thus contributed to these functional nerves of the kidneys, augments the renal secretions, and causes an enlarged state of the cortical secretory vessels. One or both kidneys may be involved in the disease. When both are involved, the system goes down most rapidly.

This disease is known by the excessive quantity of urine passed, and the great thirst for water.

The indications of cure consist in taking care of the cause, which lies in the spine and excited renal nerves, and thirsty stomach and duodenum.

TREATMENT.

Give the balsamic diuretic. Dose, ʒi four times per day. Keep the liver and bowels sufficiently open by the use of two one-half grain sugar-coated podophyllin pills, and repeat the dose often enough to keep the bowels a little lax.

Also give: ℞ Fl. ex. cypripedium, ladies' slipper, ℥j, f. ex. marsh rosemary ℥i, licorice ex. 2 ozs. dissolved in boiling water ℥iii; when cool, mix. Dose, ½ʒ every half-hour, or often enough to allay the irritation of the stomach, and thereby prevent the thirst. Restrict the draughts of water to ʒvi once per hour. Carry a stick of licorice ex. in the pocket to nibble when thirsty, instead of indulging in too frequent draughts of water. The balsamic diuretic, for a change, may be modified by mixing it, equal parts, with the pulmonary balsam.

Apply the spinal liniment on the spine freely once per day.

TOPICAL SURGERY.

INFLAMMATION.

When any part of the animal body is red, swelled and painful, this state always receives the name of *inflammation.*

Inflammation is said to be *acute* when attended with redness, swelling and pain, and when the quickness of its course is such as to terminate favorably by *resolution* within a few days, or brings on in the space of time, suppuration, or when seated in vital organs, even the patient's dissolution.

Chronic inflammation is of a slower and less painful kind, frequently beginning almost imperceptibly; then lingering in parts for an indefinite period. It may be attended with little heat or pain. Gradual and insidious as its progress may be, it frequently leads in the end to structural changes and functional derangements of the most serious and irremediable kind. Acute inflammation may terminate in it, and many of the slowly formed thickenings and indurations of various tissues appear to be effects of it.

Among the most remarkable effects of inflammation are, the adhesion of parts one to another; the filling up of the interstices of the cellular texture with fibrine; the deposit of the same substance upon free surfaces in the form of one or several layers, having the appearance of a membrane, and hence frequently called pseudo-membrane; or around collections of purulent matter in the form of a cyst; or around a foreign body lodged in the parts to prevent irritation of the neighboring textures; or it is deposited between the surfaces of a recent wound which have been brought together, where it forms their bond of union, called healing by *first intention*. Whether inflammation is to be *adhesive* or *suppurative* depends on the part affected. In serous membranes, adhesive inflammation is more readily excited than suppurative. On the other hand, a mucous membrane is more prone to suppurative than adhesive inflammation.

NUTRITION.

In order to comprehend the principles of inflammation, so as to be able to render proper medical aid, it will be necessary to understand the laws that govern nutrition in a state of health, and the pathology of the abnormal conditions on which inflammation depends. The part that the vital nerves perform in nutrition, is that of furnishing a kindred element to combine with the vital element contained in the globule of the blood, to form the tissue of the part. These arterial blood globules being homogeneous in every part of the system to which they are sent, and as many parts of the system are dissimilar in chemical composition, we are compelled to account for this dissimilarity through the agency that the vital nerves play in furnishing these dissimilar nutritive incentives. By this element contained in the arterial blood globule being capable of combining with different bases, and in different proportions with the same base, qualifies it to contribute to the structure of all the variously composed parts of the system. Any cause that partially or wholly obstructs the circulation in a vital nerve will cause a partial or complete suspension of nutrition in the part over which the vital nerve presides. The circulation in the capillary arteries is suspended, more or less, corresponding to the nervous obstructions, and a corresponding state of congestion obtains in the part.

When the obstructed circulation is complete, the capillary arteries will be distended by the forcing power of the heart until the serum escapes through their walls, and even in extreme cases the red globules will escape also, as in the cases of pneumonia and dysentery.

When the capillary arteries become distended to a certain extent, they become painful. which is more or less acute in pro-

portion to the extent of the congestion. Thus we have to make up the phenomena of inflammation: 1st, Nervous obstruction; 2d, suspended nutrition; 3d, capillary arterial congestion with tumidity and soreness, and 4th, pain.

This painful sensation is divinely designed to induce by sympathy a nervous rally from all parts of the system to revive the circulation in the obstructed nerves. When the nature of the nervous obstruction is such that this nervous rally shall succeed in restoring the nervous circulation, nutrition is resumed, and the congestion subsides. When an inflammation thus subsides, it is said to terminate by *resolution;* but when this resolution does not obtain, effusion results. By this suspended animation, the capillary arteries are disenabled to retain their usual caliber under the force the heart is able to exert upon them. They are thus compelled to yield to this force, until the serum escapes through the meshes of their distended walls. When this effusion escapes into the cellular membrane, the tumidity continues until the capillary arteries become blocked up with crassamentum; this gives the red appearance to a phlegmon which always degenerates into abscess and suppuration. When effusion occurs in an inflamed mucous membrane, it escapes into the cavity of the part in the form of a limpid albumen at first, which is called by different names in different parts. When it occurs in the nasal fossæ it is called *coriza;* in fauces, trachea and bronchial membranes, a blenorrhœa; after it degenerates into a yellow appearance it is called catarrhal pus; when it occurs in a serous membrane, it escapes into the serous cavity in the form of a thickened fluid resembling bird lime, containing fibrine and the phosphate of lime, that endangers the adhesion of contiguous parts. The pain in an inflamed serous membrane is generally so intense as to establish a favorable reaction, and it thereby generally terminates by resolution.

The functional secretion of a membrane is always suspended, and the abnormal one obtains when inflamed. The approximate cause of inflammation is due to a suspension or depravity of one or more of the three contributors to nutrition, which are, first, that which is contributed by the vital nerves; second, healthy arterial blood, and thirdly, a proper thermal temperature of 98 deg. Fah. The nerves admit of three derangements, either of which will disqualify them for contributing their share to the work of nutrition. First, external violence; second, deranged insulation; thirdly, depraved element, derived from contagion, infection, or narcotic poisons. Insulation may be deranged so as to suspend the nervous circulation in part or in toto, by congestion and inflammation of the neurilemmas. The nerves are very subject to stricture from

congestion of the periosteum in the foramina by contracting the passages through which the nerves emanate from the spine. This congestion of the periosteum of the spine may be induced by violence, by severe colds, a scrofulous diathesis, the use of mercury, venereal poison; also from long-continued glandular obstruction, the secretion of which overflows into the circulation, rendering the blood too impure to supply but poorly the fine structure of these membranes, and they thereby become chronically debilitated, so as to become easily affected and thrown into a state of congestion from slight colds or over-fatigue. The different preparations of mercury, when used, more or less of it, is deposited in the cells of the spongy bones of the spine, to become a constant exciting cause of congestion and inflammation of the periosteum, to the damage of the circulation in the spinal nerves.

Among the causes that impoverish the blood are, improper food, poisonous beverages, glandular secretions and purulent matter taken into the circulation; also, the imperfect work of diseased organs of the digestive apparatus in preparing the aliment for chyle. Third, and lastly, caloric as a supporter of nutrition. The system provides for its caloric as well as for its neurine or electricity. It is a well-established fact in chemistry, that at every chemical change matter undergoes, caloric and electricity are evolved; consequently every elemental change that is wrought in transforming crude elements into the structure of the living temple, contributes to the perpetual supply of these two subtle elements.

The nerves are insulated by the neurilemmas, so as to preserve this electrical element for its specific uses. There are, also, devices for the preservation of the engendered caloric, sufficient to carry on the work of nutrition under ordinary circumstances. The blubber that envelopes the whale, being a non-conductor of caloric, operates to prevent the internal temperature from being sunk to the temperature of the ocean, so, in like manner, is the adipose matter deposited in our cellular membrane able to preserve a due amount of caloric needed in the warm season, in a temperate climate, but when the season becomes more inclement, resort is had to clothing made of wool and fur, and to apartments where the temperature is made comfortable by the use of fuel. The calorific waste is much greater in winter than any one would suppose. To preserve this waste in out-door life in winter, men can supply themselves with a sufficiency of warm clothing to be rendered comfortable. The system instinctively provides a much greater quantity of caloric in the winter than in summer.

It is generally conceded by physiologists that death ensues when the temperature of the whole body is sunk to 75 degrees,

and that in health it stands at about 96 degrees Fahrenheit. Therefore, it is fair to conclude that nutrition will be suspended when the temperature is reduced below 75 degrees.

When the surface or a part of the body is exposed to a lower temperature, it approximates to the lower temperature by the draft, the lower makes upon the higher. To protect the part thus exposed from being sunk below the standard of nutrition, it is supported by a draft upon the internal heat of the system. If this exposure be long continued, the internal supply will become exhausted and unable to protect the part. Then the person will sink into a state of lethargic sleep, from which they never wake.

In the work of nutritive assimilation, the principles on which it is effected are so subtle as to evade the scrutiny of the most powerful microscope, for the reason that all the elements that enter into the structure of the living body have to be first reduced by the chemical work of nutrition to an invisible gaseous element before it can rise into the visible structure of the part. When the receptive portion of the fiber is thus fed, every particle of matter in the fiber exchanges debris for this more vital element. Just in proportion to the amount of nutriment the system thus receives into its structure, is the amount consumed and reduced by combustion, to an invisible element again, in the chemical work of nutrition. Caloric and electricity are derived from it, and the residuum is carried forward in the venous circulation with the carbonic acid, which is to be exhaled by the lungs. By these laws these vital currents are constantly kept up, and the elements of the human form thus used perform their operative mission until their vigor is exhausted. Then they retire and give place to those armed with fresh vigor. In this way all make up the parts of one universal whole to clothe the spirit with a physical form, and thereby render man a living soul.

CHRONIC INFLAMMATION.

It has been shown that acute inflammation is the result of a complete suspension of nutrition in the part affected, whereas chronic inflammation is but a partial suspension of nutrition.

Every inflammation of much extent or violence is attended with a general disturbance of the whole system, called the sympathetic inflammatory fever, resulting from the perverted action of the nervous system from its normal local work by the rally to the part obstructed and inflamed. This sudden draft upon the nervous system leaves nutrition below the standard of action in all parts of the system, inducing an accumulation of arterial blood in the capillary arteries, rendering them sensitive enough to command the whole nervous system to its local work again; and as there is an unusual quantity of blood

in the capillaries, which is assimilated in a short space of time as to raise the temperature of the system to the fever heat, by the unusual quantity of caloric generated, therefore, this sympathetic fever is but a reaction from the local draft made upon the nervous system to help resuscitate the injured part.

In this fever the pulse becomes frequent, strong and full, and as nutrition is partially suspended, the secretions are diminished, urine scant and high colored, mouth and fauces parched, and bowels constipated, appetite lost, the patient restless and sleepless, headache, and sometimes confusion of intellect, and even delirium. This fever furnishes an illustration of what Mr. Hunter used to call "*an universal sympathy of the body* with the disturbed condition of a part of it." The system remits in this work of rallying to resuscitate its deranged parts, and consequently is making repeated efforts to succeed in the work of recuperation; and action succeeds reaction while the acute stage lasts, and it only becomes modified when it passes into the chronic form. And here let me remark, that it is this repeated effort that is made by a debilitated system that reveals the laws, and points out the ways, by which recuperative aid can be rendered by the physician and surgeon, to succeed in restoring a chronically inflamed part; for when nature has ceased its efforts, all proffered help must be in vain.

The treatment for inflammation must be based upon a knowledge of the cause, and the system at fault, (the nervous, or the vascular), and it not unfrequently happens that both are delinquent. The remote, as well as the approximate cause, should be considered and attended to, that the approximate may be the more readily subdued; and in all cases the nature of the cause must suggest the natural and proper treatment.

SYMPATHETIC INFLAMMATORY FEVER.

The irritation of a local injury upon a healthy constitution produces that disordered state of it termed *sympathetic inflammatory fever*. This is the immediate consequence of local irritation. This at first is a continued type of fever. It soon begins to change this type for that of the remittent; and when the system becomes fatigued and debilitated by the continuance of a disease which it cannot subdue, it at length loses the power of entering into those strong efforts which characterize the preceding description of this fever. However, exhausted as it is, it still sympathizes with the local irritation, and the type assumed in this debilitated state is that of *hectic*

fever, which is remittent in its type, a paroxysm of which is preceded by a slight chill, and followed by a fever, and terminates with a colliquative sweat. The sympathetic inflammatory type of the fever subsides when the inflammation degenerates into abscess. The hectic type is induced by pus being absorbed and carried into the circulation. Hectic fever is generally considered to be remittent in its type, by reason of the continued frequency of the pulse, which frequency is generally augmented during the febrile exacerbation. But if we take into consideration the fact that the debilitated state of the system is the cause of the general frequency of the pulse, then the type will appear to be intermittent. As it is preceded by a chill, then comes the fever with its augmented frequency of pulse, and it is terminated by a colliquative sweat; and these exacerbations recurring at regular periods. These exacerbations are marked by a sensation of burning heat in the palms of the hands, which become red and mottled. A circumscribed redness is seen in the cheeks. Whatever may be the form of the exacerbations in the day-time, they are generally succeeded towards the end of the night by copious sweats.

When a diarrhœa supervenes in the latter stages of this disease, the sweats commonly disappear. A reddish sediment of uric acid is mostly observable in the urine after the sweats; but it is absent during the hot fit, when the urine is usually pale and limpid.

TREATMENT OF HECTIC FEVER.

The treatment indicated in hectic fever should be directed to secure a healthy action of the glandular system, that the circulation may be kept as pure as possible. The nervous system should be supported by good spinal tonics, while it is laboring to repair the broken down part. Highly nutritious food, free from acids, should be given, prepared in the form of chyme, to save this power in the system to be exerted in repairing its waste places. Cleanly apartments and fresh air in sunlight are also very necessary recuperative agents.

TREATMENT OF ACUTE INFLAMMATION.

In the treatment of a case of acute inflammation, it is important for the physician to take into consideration all of the operative causes that contribute to obstruct the work of nutrition in the inflamed part, that he may properly direct the sanitary means of aiding the system in its effort to terminate the inflammation by resolution. If the fault lies in an obstructed circulation in the nerves of the part, a mustard paste should be laid on over the part, to aid, by its painful stimulative action, in inducing a more efficient nervous rally to the part than the local pain is able to command, to insure a

resuscitation of the nerves. It should be removed before it blisters the part; or it is good practice to apply a towel wrung out of hot water, as hot as the patient can possibly bear, and lay it on the painful part, changing them every three or four minutes for a half-hour, with the same intent. If the physician is apprehensive of the nervous obstruction being located in the spine, and induced by congestion of the periosteum, from colds, or any other cause, additional treatment should be instituted by applying a good stimulating spinal liniment to the spine to aid in overcoming this obstruction. If the spine has been deranged by an overflow of glandular secretions being taken into the circulation, remedies should be directed to the glandular organs in fault, that the circulating blood be rendered as pure as possible by ventilating the circulation of all these impure elements, by accelerated secretory action of all the large glands.

When no chance appears to remain for the inflammation to terminate by resolution, and the vital forces are directed to the work of breaking down the part into an abscess in the form of pus, to remove the part that has lost its vitality, then this work should be aided by cutting off the sympathy with the part by soothing anodynes, and the application of emolient poultices. When pus has been formed, as represented by softness and pointing, the abscess should be opened by a sharp instrument, as a lancet, to dislodge the pus as early as possible, which, while it remains, will effect the destruction of the soft parts in contact in every direction, as well as of that to which it is pointing to expel the pus. The sooner the abscess is opened, the smaller it will be, and the sooner will the work be instituted to provide the healthy granulations to restore the part. If an abscess be small and making quick progress to the surface, with pointing, and a thin state of the skin, denoting that it will soon burst, whether a puncture be made or not, is a consideration of little importance; for here no risk prevails of the patient's suffering being long protracted, or of the abscess being much extended; but if the abscess be large, it becomes important to expel the matter as early as possible, for so soon as the abscess is formed, more or less of the matter is absorbed and taken into the circulation, to the injury of the health of the patient; for it not unfrequently is the case where deep-seated abscesses, beyond surgical aid, send so large a quantity of matter into the circulation as to induce a scrofulous diathesis that often destroys the patient, as abscess of the lungs, kidneys, psoas and lumbar muscles and mesenteric glands.

Too much caution cannot be exercised in puncturing abscesses in the vicinity of important vessels, lest a nerve or artery might be divided or ruptured. In most cases the abscess

forms external to these vessels, and the cut should be made parallel to them. The best place for the puncture is generally where the fluctuation is most perceptible, or where the pointing takes place; for here the skin is thinnest. The size of the opening should be such as will allow the matter to escape with facility.

Sinuses are produced by the matter not readily getting to the surface, or not having an outlet made for it with due promptitude. Here the principal indication is to make an opening in such a situation and of such a size as will prevent all further lodgment of pus.

Fistulæ are disposed to occur whenever there is something at the bottom of or in the abscess keeping up suppuration a long time, or preventing the ready escape of the matter that forms; also where the abscess is subject to continued disturbance from the action of muscles; hence, one cause of fistulæ in ano. In the treatment of abscesses attended with fistulæ and sinuses, or a backwardness to heal from the pus not passing out readily, a position should be taken calculated to facilitate the escape of the matter from the opening; or the skillful application of a compress and bandage over the place where the matter collects frequently supersedes all occasion for fresh incisions.

When fistulæ and sinuses cannot be cured by the foregoing principles, and they have become indolent, recourse should be had to stimulating injections of solutions of vegetable caustic, or nitrate of silver, tannin or a decoction of marsh rosemary, before applying the compress. See breaking down by suppuration.

BREAKING DOWN BY SUPPURATION.

If a foreign substance accumulates in a capillary artery, it has to be removed by the process of suppuration; that is, it will have to be disposed of by breaking down the part, to give place for the formation of a new fiber. In instituting this process to save the life of a part, it become necessary as a primary step to set the bounds of the abscess, by the sealing process, that closes the arteries and turns off the blood from the part to be broken down. All vital support now being withdrawn, the work of decomposition begins. The sealed boundary is vitally protected from the decomposing matter with greater integrity at every other point than at the gate left for the matter to pass. This is called the *pointing* of the abscess. Every part of its boundary after the escape of the pus becomes a secretory matrix, to produce the plastic lymph needed to fill the abscess, in which to lay the tubular arteries, veins and nervous fiber, and all the new structure needed for the part. In order for this process to be carried on successfully, nature requires first, that the suppurated matter and the foreign body be expelled,

from the abscess. Secondly, it requires to be sealed up to protect the plastic lymph from escaping or being corroded by the atmosphere ; and thirdly, it requires to be tenderly cared for to protect the delicate fibrous structure that is being laid through the plastic lymph in the abscess. Here we see the wisdom and benevolence in the divine intention in rendering the part so exquisitively sensitive ; it being given as a secu rity against the disturbance of this delicate work of resurrecting the part.

If the abscess is left open, the presence of atmospheric air will corrode the forming structure and destroy its vitality ; and it will be lost and voided, as long as it is exposed thus ; also, if it is violently handled or pressed upon, it will interfere with the successful work of organizing the new fiber and vessels ; and it will be lost and new plastic lymph will have to be secreted to fill it, and the work of laying the fibers, etc., instituted again. If this loss is repeated by either of these causes, or by a foreign substance remaining in the abscess, a fistulous opening will be formed ; then it becomes a chronic abscess.

SCROFULA.

The premonitory symptoms of scrofula are manifest by an enlargement of the lymphatic glands. When the disease has advanced to a certain stage, it is apt to attack the glands proper. The complexion becomes sallow. The person does not feel languid at first, but as the disease advances it saps the foundation of the system, and enervates it, and the sinuous blood prevails and produces the scrofulous or tubercular deposit ; and in the proportion that the system is deprived of the hæmatin of the blood, the powers of nutrition will fail, and the tubercular or scrofulous habit prevail. The larger tubercles, for want of nervous support, degenerate and break down in abscesses.

There are three primary causes of scrofula, *venerea*, *itch* and *measles*. These three furnish the principal derangements that lay the foundation of scrofula in the system. For their modus operandi of enervating the system, I refer to the dessertation on scabies or itch.

The indications of cure are, to ventilate the system of the glandular secretions in the circulation ; to remove all glandular obstructions to prevent the repetition of the cause of de-

fective nutrition ; to tone up the system, and thereby give increased energy to the nutritive powers of the nervous system, and put the patient on proper diet and regimen. Begin the treatment by giving from one to two grains of podophyllin, preceded by a nitrate of potassa solution fifteen grains in water ℥ii, dose, ʒii ; every one-half hour. Then use ℞ f. ex. yellow dock, burdock, dandelion, wahoo, urtica diorca, marsh rosemary, uva ursi, colocynth, prickly ash *aa* ℥i, f. ex. hyoscyamus ʒiv, T. sang. can. ʒvi, nitrate of potassa grs. 60, salicin ʒi, T. Wintergreen ʒiv, simple syrup Oi. Dose, ʒi, four times per day. If this is not sufficiently laxative, add more f. ex. wahoo, or make the deficit in the use of a one-half grain sugar-coated podophyllin pill. Use this prescription for a long time, occasionally suspending it a day or two.

CANCER,

ROSE AND SPIDER.

This is one of the most formidable diseases we are called upon to treat, and one of the most distressing and loathsome that afflicts humanity. It is not of a scrofulous origin, as has been claimed, neither is it dependent upon an impure state of the blood, or any general derangement of the nervous system, but is a local derangement in the nutritive process in a single fibre, one that diverts the recuperative element from a portion of the fibre after the proper nutritive process has obtained at the arterial termina, inducing a fungous excrescence from the fibre. Where the disadjustment obtains between the nerve, artery and fibre, so as to prevent the nutritive process from obtaining, the part is removed by the process of abscess, and the adjustment made in the relay of these vessels in the plastic lymph that fills the abscess for that object. This excrescing fungi having received the proper vital composition at the point of nutrition, is supported from direct decomposition, and as the supply is continuous, the excrescence enlarges until the extreme part decomposes, for the lack of the proper electrical circuit used in the recuperative process of exchanging the fresh element for the worn.

There are quite a variety of these excrescences recorded that depend for their dissimilarity upon the order of structure involved for their composition.

In the treatment of an external rose cancer, it is a very erroneous method of treatment to torture the patient with the slow process of cauterizing with the various orders of caustics, when it can be better accomplished, and at once, with the knife, the object being to remove the tumors and its capillary artery and nerve center, and make a proper clearance of the parts with as little waste of the skin as possible. If it is well done, no further trouble need be apprehended from its return. The spider cancer is an enlargement of an artery of the skin, and is of no importance while it is not disturbed.

SALT RHEUM. TETTER.

(HERPES PSORIASIS.)

Very small eruptions or vesicles appear, which break and discharge a thin corrosive fluid that causes a very great degree of itching, which concretes, and afterwards scabs off. Four kinds are enumerated.

1st. *Herpes Farinosus*, or what may be termed the dry tetter, is the most simple of all the species.

2d. *Herpes Pustulosus*. This form of the species appears in pustules, which are originally separate and distinct, but afterwards run together in clusters.

3d. *Herpes Millaris*, or miliary tetter. This breaks out indiscriminately over the whole body, but more frequently about the loins, breast, perineum, scrotum and groins, than in other parts. It generally appears in clusters, though sometimes in distinct rings or circles of very minute pimples, the resemblance of which to the millet seed has given rise to the name of the species.

4th. *Herpes Exedens*, the eating and corroding tetter, (so called from its destroying or corroding the parts it attacks.) This species appears at first in the form of several small painful ulcerations, all collected into larger spots of different sizes, and of various figures, always of more or less of an erysipelas inflammation. These ulcers discharge large quantities of a thin, sharp, serous matter, which forms into small crusts that in a short time fall off.

Treatment of the first order. Apply the white percipitate ointment to the affected part three times per day. For external treatment of the second order, use a strong decoction of marsh rosemary root on the parts, and keep them wet for five hours by dipping a piece of muslin in the decoction, and

apply it on the part affected. After it is removed, apply the white precipitate ointment. Repeat this wash every day, and follow with the ointment until it is well.

Treatment of the third order. ℞ T. capsicum and T. gum myrrh, *aa* ℥i, oil of wintergreen, ʒi; mix. Apply this to the tetter six times per day, and at bedtime apply the white percipitate ointment.

External treatment for the fourth order. T. capsicum and T. of gum myrrh, *aa* ℥i, oil wintergreen ʒss; mix; corn meal 12 ounces, Jamaica ginger ʒiii. Boil the corn meal, and stir in the ginger and make into mush, and when sufficiently cold to apply, to each ounce of the mush, stir in one-twelfth of the tincture, when it is wanted for use. Spread this one ounce on a piece of muslin in the form of a paste, and apply it to the part affected, and let it remain three-fourths of an hour. Thus use three of them, after which apply the white percipitate ointment for the remainder of the day. Repeat this treatment daily for twenty days, unless the recovery of the part occurs sooner.

GENERAL TREATMENT FOR ALL THE ORDERS.

℞ F. ex. yellow dock, f. ex. of burdock, f. ex. uva ursi, f. ex. of dandelion, f. ex. wahoo, each one ounce, nitrate of potassa 120 grains, salicin 120 grains. Dissolve the two last in water ℥vi; also dissolve in the water 40 grains of the extract of hyoscyamus. Mix all together. Dose, ʒi, diluted in ʒiv of sweetened water. Take five doses per day. After using this prescription two days, at bed time take four sugar-coated half-grain podophyllin pills, and repeat this dose of pills once per week for four weeks, or until the cuticle is free from any eruptions and the patient feels soundly well.

Avoid in diet and drinks every sour thing; otherwise a good sound diet may be indulged in.

ERYSIPELAS.

Erysipelas most usually attacks the face, and appears in the form of a swollen, reddened and blistered surface, on which the blistering process slowly creeps in all directions, destroying the cuticular membrane, wherever this effused, acrid serum comes in contact with it, unless a course is pursued to neutralize its corrosive properties.

The primary cause is usually a severe cold that obstructs these nutritive nerves at their spinal center. It is ever the case when the spinal column receives a severe shock from a cold

sufficient to induce conjestion in its periosteal membranes, that all the vital organs become obstructed, and an inflammatory fever results from the plethora and congestion arising from suspended nutrition, the fault of which is not due to the integrity of these nerves, but it can be found in the narrowed foraminal passage from the cord through the spine that strictures their circulation by this congestion of the spinal periosteum. The seat of the congested nervous center, when it attacks the face, lies in the medulla oblongata. The indications of cure are to stimulate and help every glandular organ perform its offices by removing all obstructions; and, secondly, to make an effort to overcome the spinal congestion as speedily as possible, by direct stimulating applications to the portions of the spine affected, and thirdly, to apply some neutralizing agent to the blistered surface that shall prevent it from spreading; fourthly, aid cuticular exhalation by the use of a diaphoretic.

The following has proved to be a successful treatment: Begin first with an antacid diuretic. ℞ Decoction of hops ℥iv; bicarb. soda ʒss; nitrate of potassa, grs. 20; mix. Dose, ʒii. Give such a dose every half-hour for six doses, then give a dose every hour. Also, begin the use of diaphoretic powders in two-grain doses, repeated every two hours. After using the diuretic three hours, give four sugar-coated half-grain podophyllin pills at one dose, and repeat the dose, if they do not operate as a cathartic in eighteen hours.

Apply the following to the inflamed surface: ℞ Tannin, grs. x; nitrate of potassa, grs. 60; warm water, ℥viii; bicarb. soda ʒss. Dissolve the ingredients in the water, and keep the inflamed part constantly wet with it by wetting a piece of folded muslin in it and laying it upon the blistered and reddened surface, and often changed, not allowing it to get dry. This muslin should be thoroughly washed before dipping it into the solution, for a renewed application, every change. For a night change, use plentifully the white precipitate ointment in place of the solution, and repeat its application often enough to keep the part constantly lubricated. Apply a good stimulating liniment on the back of the neck and the whole length of the spine once per day. Apply a hot water pack to the back of the neck for some twenty or thirty minutes, is advisable as a first measure in the treatment, to overcome the spinal congestion as speedily as possible. The bowels should be kept open by the use of podophyllin in one grain doses, taken often enough to secure two passages per day. Give the patient a drink of a decoction of mountain mint, catnip or sage, and an occasional draft of cold water. The diet should be arrow root gruel alone, when it can be obtained, else corn starch gruel, until the fever subsides. Then, when he can bear fifteen grs.

of salicin per day, in three five-grain doses before each meal, a more liberal diet can be indulged in. The spreading of the vesication is frequently checked by drawing a line around it with a pencil of nitrate of silver. A wash, also, of nitrate of silver, six grains to an ounce of soft water, is a favorite prescription to neutralize the acridity of the exhaling fluid; its only objection is that it colors the skin black and the clothing coming in contact with it. The case will be obstinately persistent in its course until the stricture of the nerves at their spinal exit is relieved; then the recovery will be very rapid. When fatal gangrenous sloughing of the part occurs, it is wholly due to a continuous stricture of the vital nerves that preside over nutrition in the inflamed part.

INFLAMED EYES.

Acute ophthalmia consists of inflammation of the conjunctiva. *Symptoms:* smarting heat, stiffness, dryness of the eye, with a feeling as if dust had got into it; the conjunctiva is of a bright scarlet redness; the redness superficial, so that the enlarged vessels can be moved by pulling the eyelids; slight intolerance to light, and flow of tears on exposure of the eye, and more or less headache and fever.

Chronic conjunctiva, or chronic ophthalmia, usually occurs as a sequel to the acute.

The acute form usually follows a severe cold, that obstructs the fifth pair of nerves in their exit from the medulla oblongata, the middle branch of which presides over these membranes. This suspended nutrition is the cause of the congestion. Long-continued congestion at the root of these nerves will induce purulent ophthalmia. A partial recovery of this nervous center will leave a chronic inflammation, the degree of which will depend upon the degree of the relief of the presiding nerve.

The indications of cure are, to relieve the obstructed nerves and the glandular inactivity usually present in the case.

Ophthalmia Tarsi is an inflammation of the palpebral conjuctiva and the edge of the eyelids, with disordered secretions of meibomian glands, so that the eyelids, stick together and become encrusted with dried mucus during sleep. It may be *acute*, attended with pain and soreness, but it is generally *chronic* and obstinate and attended with itching.

Treatment for acute ophthalmia: Proceed to relieve the congestion of the spine and head, induced by the cold, by giving

a five-grain diaphoretic powder, and repeat with three-grain doses every two and a half hours. Apply cloths wrung out of hot water to the back of the head and neck, changing often for a half hour. Also give n. potassa grs. 30, in cold water ℥viii; give ʒiv every hour; also give podophyllin grs. 2, and repeat one grain the second night. Apply the white precipitate ointment to the outer lids and around the eyes, and keep the skin constantly oiled with it. With this treatment the relief will be very prompt, seldom extending beyond the third day, and often subsiding in twenty-four hours.

TREATMENT FOR THE CHRONIC STATE.

In long-continued chronic ophthalmia, add to this treatment to induce an active nervous rally to the membranes. Apply the cholera specific without dilution, in the following way: Have ready a wash-bowl of cold soft water, and a soft sponge. Close the eyes tightly, and apply the stimulant with the finger wet in it, on the outer eye-lids. Let it smart intensely, for in this depends the success of restoring the hitherto paralyzed nerves; but when the excitement becomes unendurable, apply the cold water with the sponge, dipping it often, and continue it until the eye can bear to be opened; then apply the white ointment externally. Apply this hot application twice per day, morning and evening, until the inflammation subsides. It is a very happy surprise to see how speedily a case of a years' standing will yield to this prompt rallying process, while under the use of the above glandular treatment. Ophthalmia tarsi, of many years standing, will yield to this treatment; yet it is advisable, when they are very raw, to first, for a few days, apply a solution of tannin of the strength of tannin grs. 5, water ʒi, with a camel's hair brush; after which apply the white precipitate ointment to save the granulations. Repeat the penciling three times per day. In long-continued, old chronic cases of ophthalmia, the following syrup will be useful to take for a long time to secure a continuous, healthy glandular action, and to give proper tone to the nervous system:

℞ Fl. ex. yellow dock, burr dock, wahoo, dandelion, cypripedium, *aa* ℥i, f. ex. hyoscyamus ʒiv, nitrate of potassa grs. 60, T. juniper berries, T. wintergreen *aa* ʒii, simple syrup f. ℥viii; mix. Dose, ʒi. Give from four to six doses per day. Use two one-half-grain podophyllin sugar-coated pills every second or third day, as the case may require, to secure one or two passages per day.

CATARRH

OR, INFLAMMATION OF THE SOFT PALATE.

This disease occurs most frequently from severe colds. It is caused by a sudden collapse of the glandular system, and a partial obstruction of the cervical nerves that preside over nutrition in the uvula, or soft palate.

When the spine, at the seat of these nerves, becomes affected by a chronic inflammation between the joints, the palate will become congested by slight changes of atmospheric temperature, from temperate to below freezing. Then the chronic habit is formed that is called *Catarrh.*

As this spinal congestion descends from joint to joint, and partially obstructs the nerves that arise between them, congestion and inflammation in the organs over which they preside result. In this way this disease descends from the palate to the fauces, trachea and bronchia, inducing tracheitis and bronchitis.

TREATMENT.

Use the internal treatment recommended under the head of chronic bronchitis. Several gargles may be used to advantage. First, cholera specific ʒi, diluted in cold water ℥iv. Use ʒi as a gargle ten times per day. No harm will result from swallowing it. Second, f. ex. of marsh rosemary ℥ii. Use ʒi as a gargle. Repeat it five times per day. Third, tannin grs. 15, in solution of water ℥iv. Use ʒii as a gargle, in place of the others, five times per day. This may be sent into the nose with a syringe, in bad cases, to come in contact with ulcers on the back part of the uvula.

In case of syphilitic ulcers, use nitrate of silver grs. 5, in solution of water ℥i. Apply this with a swab to the palate and fauces. Keep the mouth open for a short time; then use directly a gargle of either the tannin or marsh rosemary, after first washing out the mouth with some fresh water. Use it three times per day. Use the spinal liniment on the back of the head and neck once per day. Inhale the gas accumulating from oil of peppermint several times per day. Abstain from the use of everything sour, and if the disease is of venereal origin, abstain from the use of meat.

SCABIES, OR ITCH.

This is a contagious disease, dependent upon exposure to one who has the disease, for its propagation and spread in families and communities.

It first makes its appearance upon the wrists and between the fingers, and in a short time the eruptions degenerate into a white pus contained under the cuticular elevations. After a few days, it makes its appearance over various parts of the system. Its time of incubation, after exposure by contact with one affected with it, is from one to two weeks before it makes its appearance.

The presence of this virus in the pores of the skin inflames and obstructs them, and suppuration is the result.

This disease is not unfrequently transferred from the external to the internal membranes, inducing tracheitis, bronchitis, pleuritis, peritonitis or vaginitis. Under these circumstances the system will rapidly degenerate into a scrofulous habit by the great amount of pus taken up by absorbents and carried into the circulation, to go on from bad to worse until it accumulates in large abscesses, to ruin the patient.

The indications of cure are, to aid the glandular system, and use such agents as are indicated, to neutralize the virus of the absorbing pus, and render the blood more nutritious, and use an external ointment that will support the activity of the healing process in the skin, and protect it from a further spread.

Begin the treatment with a solution of nitrate of potassa grs. 20, water ℥vi. Dose ʒii every hour. On the second night give an adult podophyllin sugar-coated pills, grs. 2, and less by age. After this operation, use fine sulphur ʒiv, molasses ℥vi ; mix ; stir well before giving. Dose to a child four years, old two teaspoonfuls at bed-time for three days ; then skip one night, then use three nights. Use externally the red precipitate ointment freely. Just keep the bowels a little lax with the sulphur. Ten days to three weeks will cure this disease.

PRAIRIE ITCH.

This disease is more troublesome than the pustular itch called *scabies*. It occurs more frequently in warm than in cold weather.

The eruptions are preceded by an itching, stinging sensation in the skin, which, upon being irritated, blotches up like the hives. In this state of congestion the itching continues until the patient is stimulated to scratch the part until it bleeds ; then it will subside and heal. Fresh eruptions continue to

make their appearance, until so much of the surface is affected as to render the symptoms unendurable.

The immediate cause is congestion of the cuticle to the closure of the pores. This disease is not contagious, occurring most usually sporadically, but sometimes it occurs epidemically in malarious prairie districts. The carbonic acid gas escaping through the pores of the skin being rendered unduly acrid, irritates the pores and closes them, and they will itch and sting until they are mechanically opened.

The internal treatment for ague and fever, and the use of the white precipitate ointment externally, will cure the patient in two or three weeks. An occasional dose of the sulphur and molasses will expedite the cure by neutralizing the pungency of the carbonic acid, by combining with it. Persons who do not use hard, limey water are not very subject to this disease. The kidneys become more or less obstructed by the calcareous element, to disqualify them for depurating this excess of carbonic acid from the circulation; hence, it has to find its exit through the pores of the skin.

PERICARDITIS CHRONIC, AND DROPSY OF THE CHEST.

This case may be known by the following symptoms: Pain in the region of the heart and in the left side, running up the side to the top of the shoulder, occasionally. An habitual cough, with phlegmy expectoration; finds it difficult to lay low in bed; pale and sallow complected; appetite not good; quite slight exertion will induce hurried respiration. In advanced cases the patient has to be bolstered up in bed; cough frequent, with copious expectoration, and bloating of the lower extremities.

TREATMENT.

℞ Fl. ex. hops, burdock, yellow-dock, wahoo, uva. ursi, *aa* ℥i, f. ex. hyoscyamus ʒiv, nitrate of potassa grs. 45, T. wintergreen ʒii, simple syrup ℥vi; mix. Dose ʒi six times per day, diluted. At bed-time give grs. iii of diaphoretic powders. Also, make a free use of the pulmonary balsam in drachm doses every time the cough becomes troublesome.

After taking this prescription for two days, at bed-time take

three sugar-coated half-grain podophyllin pills, and afterwards take one pill at night, if having no passage of the bowels on that day. When the cough becomes troublesome, while taking the above prescription, the patient may take three grains of the diaphoretic powders once in three hours, or often enough to carry that point, which serves to overcome the dropsical secretion in the chest, and support the nervous system to resume nutrition in the chronically inflamed pericardium. After the cough improves with all other symptoms, three to four doses of the syrup per day may suffice. By using proper judgment to carry these points with this prescription, the patient will recover in the course of from four to six weeks. The author has met with great success in this case with the use of these remedies.

SPLEEN ENLARGEMENT.

This enlargement is induced by arterial plethora often repeated; as in a long-continued case of ague and fever. Use the treatment directed for intermittent fever, but reduce the quantity of the doses one-half. Also use the same for a habitual pain in the spleen, or for pain in the left side, remembering that the liver must be opened before beginning the use of the tonic. Apply the spinal liniment on the spine the length of the chest once per day, and not fail to keep the liver gently open with podophyllin pills until the tumid state of the spleen subsides.

PLEURITIS,

OR, PLEURISY AND ACUTE PERICARDITIS.

This acute inflammatory attack of the pleura, when occurring in the left side, usually involves the pericardium of the heart in it; and, as the symptoms and treatment are the same in either, for brevity's sake we will treat of them together. The symptoms are a high bounding fever pulse, with a pain that lancinates so keenly as to cause the patient to catch the breath in less than full inflations of the lungs.

TREATMENT.

℞ Give hyoscyamus ex. grains five dissolved in ʒiv of hot water, T. peppermint ⅟₄ʒ sweetened for one dose. Then, if the patient does not become free from pain in one hour after, give two more grains of the hyoscyamus extract. Supply hot cloths wrung out of water as hot as the patient can bear, and apply them to the painful portion of the chest; and change them every four or five minutes until relief is obtained.

Also prepare a solution of nitrate of potassa grs. xx, in water ℥iv. Take ʒiv every one-half hour until it is all taken. After giving the first dose of the solution, give podophyllin grs. ii, in a tablespoon of milk, drinking some before and after. The pulmonary balsam should be used in ʒi doses every hour. If three-grain doses of diaphoretic powders be given once in three hours, the patient will perspire and sleep. After the liver is well opened, a dose of diaphoretic powders of three grains each taken three hours apart, and the pulmonary balsam, will finish the treatment in the case. The patient will be relieved in three hours and rest on this prescription.

RHEUMATISM, ACUTE AND CHRONIC.

WHITE SWELLING.

White swelling is an enlargement of the knee joint, arising first from a disability of the internal sciatic nerve to support nutrition in this portion of the external membrane of the capsular ligament of the joint. Congestion and effusion of a phosphatic fibrinous lymph into the cellular membrane, that combines with the lime, and the overflowing urine being turned into the circulation, forming the triple concretion of a phosphatic urate of lime. This effused fluid being too dense and tenacious to be taken up by the lymphatic absorbents, remains and augments in the cellular membrane to enlarge this concrete swelling, which is wholly external to the capsular ligaments of the joint, and not at all in contact with the periosteal membrane of the bone of the joint. When this concrete enlargement is found upon a horse, it is called, in veterinary surgery, a bone spavin.

We must bear in mind, while contemplating the pathology of a class of inflammatory diseases that involve the large joints of the upper and lower extremities, that they are local inflamma-

tions; and that all locally inflamed parts have their direct cause in an obstructed state of the nutritive nerves, that disqualifies them for furnishing the electric radical primates, for combining the recuperative element needed for the structure involved; also that this obstruction will be invariably found at the spinal emanation of the nerve. Congestion of the periosteum of the spine narrows the canal and strictures the nerve in its passage from the medulla spinalis through the spine. The fault is in the congested state of the spine; the nerve being mechanically strictured will promptly support nutrition as soon as the stricture is removed.

This congestion in the spine may be mechanically induced by lifting, jumping upon solid ground, inducing congestion in the synovial membranes between the joints; also by taking a cold,—but impure blood is the most general exciting cause in protracted cases of gout, and chronic rheumatism, that involve the large joints of the extremities. White swelling, gout, inflammatory rheumatism, and inflammation of the capular ligaments of the ankle joints, all originate from a spinal obstruction of their recuperative nerves, and only vary in the portion of the spine from which they emanate. I here class them all together as local inflammations of the large joints of the extremities, and treat of them in their acute and chronic stages.

When the system has acquired a gouty or rheumatic habit, its relapses are quite frequent, and are subject to occur under severe colds and excessive systemic exhaustion.

The remote cause of this systemic condition requires a careful and elaborate analysis to trace all its concatenations in the development of this spinal weakness, or prostration; for it is not the creature of a day, but has been sapping the foundations of the health of a patient for a long time. It can first be seen in an abuse of the digestive apparatus; in the use of improper food and unhealthy drinks; also in the derangement of the nervous system, by sitting in crowded assemblies, and in crowded and poorly ventilated sleeping rooms; in late hours; in brooding over disappointed hopes, and undue love of money and position,—all which serve to impair digestion, distract the brain, and prostrate the vital nerves that preside over nutrition. When the food is not properly chymified, it is apt to degenerate into an acid. This acid is taken into the circulation and sent on to the kidneys for separation from the blood. When the kidneys are thus taxed beyond endurance, a partial paralysis ensues in the functional nerves in the secretory department, and congestion and obstruction in the excretory ducts results; and urea is turned into the circulation by reason of such obstruction. An overflow of urea into the circulating blood not only renders the blood less nutritious, but it becomes a source of irritation,

congestion and albuminous obstruction of the capillary biliary ducts, and a biliary overflow of this acrid bile into the circulation obtains, to render the blood still less nutritious. Even when but a few of the renal excretory ducts are obstructed, it serves to deprave the recuperative work in the fine structure of nervous fibrillæ, the epithelial membranes of ducts and the synovial membranes of the joints. This defective nutrition is rendered more insufficient in the work of recuperation by an increased number of the renal excretory ducts being involved in the obstruction, to augment the quantity of the renal overflow. While small quantities serve to thicken the serous membranes between the joints of the spine, certain larger quantity of its accumulation in the circulation will induce a general suspension of nutrition, and bring on a chill, to rally an adequate systemic nervous force to render the impoverished blood assimilatable.

While the great spinal nervous centers are being disarmed by a chronic renal derangement, exhausting labor, jumping or lifting, to injure the synovial membranes between the joints, or a severe cold that congest a portion of the spinal membranes, will tend to bring on a fit of rheumatism in the part dependent upon the nervous center obstructed; and its duration will depend upon how speedily the remote cause, located in the renal organs, the approximate cause, located in the congested spinal nervous center, are removed, to relieve the direct cause of suspended nutrition, inducing congestion and inflammation in the capsular ligaments of the affected joint.

There are some peculiarities in a case of acute inflammatory rheumatism not common to other orders of this class of inflammations, "which is the transfer of the inflammation from the large joints of the lower extremities to those of the upper extremities." In the winter of 1850 and 1851, the author had an opportunity to observe several cases of the one under consideration. A severe epidemic of putrid sore throat was very prevalent: quite a large per cent. of these cases was prostrated with inflammatory rheumatism. These occurrences were only with those who had a severe pain in the head, and a high fever from the effects of the local inflammation, and of several days duration. Those who escaped the sequences of this rheumatism were more promptly relieved by proper direct treatment of the inflamed throat, that caused an early subsidence of the fever. But with the less fortunate cases, the systemic rally to that nervous center was sufficiently intense and continuous to leave the lower sciatic nerves unable to support nutrition in the lower extremities, while the febrile arterial force induced congestion in the large joints of the lower limbs.

The intense pain induced by inflammation in these dense,

fibrous ligaments instituted a nervous rally that restored the activity in the lower sciatic nerves in a short time ; but this severe rally was at the expense of deranging the normal activity of the upper sciatic nervous centre, that induced congestion in the capsular ligaments of the joints in the arms. If this paralysis affects the cardiac nervous centre also, which lies contiguous, the heart will be involved in inflammation. The pain in the upper extremities may be as intense as it was in the lower one, but the rally cannot be as prompt, by reason of the remaining sensitive state of the improving lower seat of inflammation. Consequently, the upper limbs will improve slower ; but usually the congestion is of less intensity than that which was induced in the lower limbs. Prompt relief of the glandular obstruction present in these cases is indicated, and will not fail to save the patient from these painful sequences. Add to this an application of an active liniment to the spine, will prevent this metastasis. There are three other causes that often serve to induce rheumatism :

First : *The Turn of Life* with the female. At this period menstruation begins to be suspended. This functional work serves as a purifier of the blood, wherein the glandular system has been habitually inactive, and the system made the best of this monthly depurative work to secure passable health. With this suspended aid comes less nutritious blood, spinal derangement at the sciatic centres, and a rheumatic habit obtains, that becomes as intractable as are the glandular and nervous systems slow to assume new duties and become aroused to their full standard of functional activity.

Secondly : *Deposits of mercury*, accumulated in the cellular structure of the bones of the great joints and those of the spinal column, caused by the use of calomel and mercurial blue pills. This order is very intractable, rendering the health of the patient very unstable, having a tendency to take a cold easily, and with its spinal congestion induced, augments or brings on a fit of rheumatism. In this way these poor sufferers live at a poor, dying rate. Some have been cured, others greatly relieved of their suffering, while millions have found, from the use of this drug, premature graves.

Thirdly : *Siphilitic Rheumatism*. Physicians of very high authority have ventured the statement that it is very difficult to determine whether this rheumatism is of venereal origin, or the result of mercurial treatment, so commonly used in that disease by the allopathic school of physicians. (See Mercury) As the author has never known a case of rheumatism to occur as a sequel to venerea among the great number of cases successfully treated by his vegetable remedies, is an evidence that an abusive use of mercury has been the cause of the spinal

congestion that induced the rheumatism; proving that the sequelæ of mercury are worse than the disease for which it is used. From the effects of one dose of calomel administered to the author, while suffering from scarlet fever, when he was six years old, so much deranged the spine at the sciatic nervous centres, as to induce this rheumatic habit, that lasted thirteen years. At this time relief was afforded by the enlargement of the bones, while making the growth from youth to puberty. Its routine of symptoms were as follows: Upon taking a cold, sometimes the left and at others the right knee would begin to be painful, and swell to a great extent, which was painful beyond the power of language to express. This attack would generally be of about six weeks duration. During this convalescence the limbs would become serviceable, until prostrated by another cold. The mercurial deposit lying in the spine to weaken the nutritive processes in the membranes, and induce congestion upon a slight chill, and afterwards to prevent or protract their recuperation. Fifty-one years have elapsed since being relieved from this mercurial disease, in which the author has enjoyed good health.

ACUTE SCIATIC RHEUMATISM

Is one of the most painful diseases known, and one that renders the patient immovable, without exciting the most intense pain, but when properly treated is as tractable to consistent remedies as many diseases of less formidable character, yet it requires a bold, full-dose treatment adequate to overcome all the impediments found in this path of health. We find glandular obstructions, impoverished blood, congestion of the spine, and great nervous prostration, and suspended nutrition, congestion, and a painful inflammation in the capsular ligaments of the affected joint. For external treatment for the spinal congestion, apply a strong spinal liniment twice per day. To remove the renal obstruction, and render the circulation more nutritious and more combustible, give decoction of hops ℥iv, nitrate of potassa grs. 30; mix. Dose, ʒii every half-hour until it is all taken. Also, begin the use of ℞ Ex. hyoscyamus, (Henry Thayer), grs. 40, f. ex. phytolacca d, ʒii, f. ex. wahoo ℥i, T. lobelia seed ʒi, T. sang. can. ʒii; dissolve the extract of hyos. in one ounce of warm water, put all into a four-ounce phial, add T. wintergreen ʒii, and fill the phial up with simple syrup. Dose, ʒi in a little water. Give such a dose every two hours for six doses; then give a dose three hours apart.

If the patient is suffering with much pain, for the first dose dissolve 5 grains of hyoscyamus in ʒiii of water, and add T. wintergreen ¼ʒ, sugar ʒss; give it at one dose to support the nervous system and relieve the suffering. Afterwards, give from

two to three grain doses of the hyos., and from two to two and a-half hours apart, or often enough to make the patient quiet and get some rest, extending the time between these doses during the time of rest and quietude from pain. After using the hop and nitrate solution three hours, give two and a-half grains of podophyllin in a tablespoon of milk, letting the patient drink a little milk before and after taking it. On the second day, after finishing the use of the hop solution, give the following: uva. ursi. ℥iv, decoction of hops ℥iv. Dose, ℥ii every hour. Keep the inflamed joint constantly wet with wet cloths wrapped around it, and dry ones externally. If the liver is not properly opened in eighteen hours, two more grains of podophyllin should be given. After the fever subsides, give grs. iii of salicin every two and a-half hours. To illustrate the success of this prescription in severe cases occuring in the author's practice, a short history of a few cases will be related: The author, in 1844, was called twenty miles, in the case of James Spencer, living in Warren, Pa. The case was a very painful one of ten days' standing, and immovably confined in bed. Arrived at evening and staid over night, and used the above treatment. The patient rested well from two a. m., and was able to move the limb and sit up in an arm chair comfortably, in the morning. He followed up the treatment until he was able to be about. He had no relapse—the recovery was complete from the one visit.

The case of Stillman Chase, of Little Valley, four miles north of Salamanca, N. Y., which town has since been built. Was called to the case, sixteen miles, in December, 1847. Found the patient immovably confined to his bed, and greatly worn with two weeks' suffering. Had called first one physician, then added the second, and finally the third. But as no relief came of their treatment, the author's services were sought. Arrived at evening; gave the above treatment; the patient slept well from eleven o'clock until three A. M.; when he awoke, was perspiring gently, and felt comfortably free from pain; could move his limb without pain or aid, and turned upon his side without help; slept again until seven A. M., and when breakfast was ready he was assisted into an arm chair, and sat up to the table and ate some light toast and drank a cup of tea. Left after breakfast, and returned the second day after, and found him up and dressed, and able to walk with a cane to steady himself, as the ligaments of the joint were so much relaxed as to give inadequate support to the position of the joint. Directed the knee joint to be carefully bandaged; left treatment for ten days. His recovery was steady and complete.

The case of Samuel Town, resident of the town of Leon,

Cattaraugus county, N. Y. Was called in August, 1846. Mr. Town was six feet and four inches tall, and a powerful athlete with the axe. He had nearly finished a fifteen-acre job of heavy timber slashing. Being ambitious to fell a certain area of timber per day, drove on to induce systemic relaxation, spinal exhaustion, and while being drenched with perspiration, returned home in the evening without coat or jacket; took a severe cold, inducing congestion in the spine at the lower sciatic nervous centers, which induced an equally severe case of that of Mr. Chase, before related, and of fifteen days standing, under the treatment of Dr. Wheeler, of Rutlege, during the time. He was a well-read allopathic physician, and had represented his senatorial district in the New York Legislature. But as no visible improvement obtained from his remedies, an intelligent messenger was sent to call the author, nine miles away. As the messenger was able to give a satisfactory descriptive history of the case, treatment was sent, it being in the evening, with a promise of a visit the next day. The prescription was followed, and the author arrived at 10 A. M., and found the patient free from pain, which left him at 2 A. M. Afterwards he slept well until morning; was perspiring gently, pulse moderating. Had him helped out of bed into his chair, without inflicting any pain; took some tea and toast; directed the above continued treatment, and returned after two days. The patient had no relapse of the pain; had improved so finely as to be up and dressed, and able to be carefully walking with the assistance of a cane. Directed ten days treatment, and left the case, which steadily improved so as to require no further treatment.

A multitude of other cases might be cited, but these cases are selected as being the most severe cases that a physician may be called to. Their improvements are cited to give confidence in the efficacy of the treatment prescribed, for any case of acute sciatic rheumatism. This selection of remedies to fill the rheumatic indications of cure, are the best selection the author has been able to make in a test of forty years practice. They are recommended in chronic cases, but less in quantity will suffice, being satisfactorily efficacious, and leave the system in good condition after recovery. Yet there are other remedies that fulfil these indications, but experience has placed them lower on the list of remedies.

One of the worst cases of chronic rheumatism that the author ever saw, and which was successfully treated by him, will here be described, and the course of treatment pursued. This was the case of Hiram B. Willowby, of the town of Sheridan, Chautauqua county, N. Y., aged forty years. He had been helplessly confined to his couch for fourteen years. His

elbows and knees were partly flexed and anchylosed, nearly at an angle of 45 degrees. The wrists and ankles were contorted, crowded partly out of joint, and enlarged calluses that were fiery red and acutely painful. The second joints in all the fingers were enlarged to the size of butternuts. This case was put under treatment for chronic renal and biliary obstruction, nervous prostration and spinal congestion at the upper and lower sciatic centers. In six weeks he had improved so as to be up and able to get out on to the sidewalk by the support of two canes, and in one year was well and able to do a good days work on his farm. One year after this, being in his vicinity, made it an opportunity to call on him. To show his physical ability, he called attention to six cords of wood ranked up in his yard that he had chopped; a ten-acre orchard that he had pruned, and stated that he had also participated in all branches of raising and securing the crops on his farm. For external treatment of the spine and inflamed joints, the following liniment was used: ℞ Fresh beef gall ℥vi, spirits of turpentine ℥ii, neats foot oil ℥ii, essence of hemlock ℥i, T. of cayenne ℥ss, alcohol ℥iv, laudanum ℥i; mix. This liniment was freely applied to the spine and inflamed joints morning and evening, until the joints had fully recovered.

To remove the obstructions in the kidneys, gave f. ex. eryngium aquaticum ℥ii, nitrate of potassa grs. 30, water ℥ii; mix. Dose, ʒi. Gave a dose diluted in water ʒii every hour. Gave grs. of colocynth, five at noon and at bedtime; gave grs. two of podophyllin, and afterwards kept the bowels open by one grain dose of podophyllin as often as needed. After using all the first diuretic, gave the following for a long time: ℞ Eryngium aquaticum f. ex. ℥iv, f. ex. cimicifuga ℥iv, f. ex. hyoscyamus ℥i. T. lobelia seed ʒss, T. sang. can. ʒi, f. ex. of dandelion ℥i; mix. Dose, ʒi diluted in water. Take a dose every two hours. This prescription is diuretic, diaphoretic, and a good stimulating nervous tonic. When the amount of this prescription directed to be used does not control the pain, or fails to induce any perspiration, carry that point by using occasionally a three-grain dose of the diaphoretic powders; also, ensure a fair night's rest with the same. Hot packs on the spine and hot thermal, spring or domestic baths are recommended.

RACHITIS, OR RICKETS.

This disease generally attacks children, and distorts the spine into a lateral curvature or a hump-back.

The fault lies in defective nutrition in the psoas muscles and capsular ligaments, that interferes with the symmetry of development. Glandular obstruction, and a habitual constipated state of the bowels, usually precede this derangement.

The indications of cure are to secure a healthy and continuous action of the renal and biliary organs; to stimulate the spine by an external, direct application.

TREATMENT.

First, give f. ex. burdock ℥ii, f. ex. yellow dock, f. ex. dandelion *aa.* ℥ii, f. ex. colocynth ʒi, f. ex. cypripedium ʒi, f. ex. marsh rosemary ʒi, T. wintergreen ʒii; mix. Dose, half-drachm diluted in ʒii of cold water, sweetened; give four doses per day, or enough to keep the bowels a little lax. Apply the spinal liniment or the cholera specific on the spine once a day, or, which is more preferable, the rheumatic liniment. Abstain from the use of every sour thing in food or drink, and use exercise in the open air in pleasant weather; continue this course until the recovery is complete. Sweet Fern, in this case, is a good substitute for Marsh Rosemary. The author has never known this treatment to fail, if continued a sufficiently long time, and as it is a very harmless and invigorating prescription, there can be no fears from its use by the year. It usually takes from one to two years to overcome a curvature of two years' standing.

FELON, OR WHITLOW.

A felon is a very painful swelling, located on the inside of a finger or thumb-joint. This inflammation is very much disposed to suppurate, but the suppurative process is very slow to mature. The immediate cause is inflammation of the annular ligament of the joint, and most generally induced mechanically by a blow or the use of some tool, as a spade.

TREATMENT.

℞ F. ex. hyoscyamus ʒiv, nitrate of potassa grs. 30, f. ex. wahoo ℥i, T. wintergreen ʒi. water ℥i; mix, and add simple

syrup to make in all ℥iv. Dose, one drachm every three hours, unless the Wahoo shall keep the bowels too active. Poultice the felon with a bread and milk poultice continually, and open the swelling lengthwise as early as possible, to relieve the stricture of the hardened skin that augments the pain, and apply a crystal of the nitrate of silver to the fungous flesh in the opened part, to excite the suppurative process, and repeat it once per day; after each operation do up the finger in the white precipitate ointment, and keep it moist with it continually. Much time may be saved by hastening the decomposition of the proud flesh that delays the recuperation of the abscess. If it shall be so painful as to be unable to sleep, take four grs. of diaphoretic powder on going to bed, and repeat the dose when the pain returns. To do it up at night in a thick bread and milk poultice, after it has been opened and cauterized, will serve to facilitate the recuperative process and keep it free from pain.

INFLAMMATION OF THE PALMAR FASCIA.

Involves the inner fascial membranes of the palm of the hand.

Treatment: To restrict the extension of the inflammation and relieve the pains, do up the hand in soft soap, (it will not injure the skin); keep it renewed until an opening point presents between the fingers. When leaving off the use of the soap, apply the white precipitate ointment, and keep it well lubricated with it until it is well. Many a hand has been saved from amputation in this case by a free use of this treatment.

BOILS AND CARBUNCLES.

These dermoid or skin abscesses are too well known to need a description. Their cause is due to a habitual constipation of the bowels, wherein the fæcal matter, to some extent, becomes decomposed and carried into the circulation. Some of this poison, in being depurated by the dermoid exhalents, inflames the pore or duct, and closes it, and the systemic alternative of

breaking down by abscess is resorted to to remove the fibres that have lost their vitality and resurrect new ones in their places. It is proverbially remarked that when this habit of boils is once formed, their recurrence may be looked for until the habit is changed by a proper course of medical treatment. Carbuncles are located upon the back of the neck over the broad ligament. It is a very painful phlegmon, and when it involves the ligamentum nuchæ, in the inflammation, it frequently destroys the patient. The external treatment should be early poulticing, to save time and obviate pain.

INTERNAL TREATMENT.

℞ F. ex. wahoo, yellow dock, burdock *aa* ℥ii; F. ex. dandelion ℥i, f. ex. hyoscyamus ʒii, nitrate of potassa grs. 40; dissolve the nitrate potassa in water ℥i and mix. Dose, ʒi diluted in water ʒvi. Take six doses per day two hours apart while the boils are troublesome; then take three doses per day until it is all taken, and the habit will be fully overcome. When a boil is very painful, give in addition to the above prescription diaphoretic powders grs. iii, every three hours, until the patient is made comfortable enough to get a tolerable amount of sleep and rest.

STONE BRUISE

Is an abscess upon the foot, caused by a bruise. They are very painful during the suppurative process. Very tender-footed children should be kept well shod. Keep the bowels open with T. rhubarb ʒi, diluted, morning and evening until it moves the bowels, and repeat a dose when needed. To relieve the pain, give diaphoretic powders grains two, every two hours. Keep the foot done up in wet cloths or poultices continually, until the abscess is opened by a lancet, as soon as pus is formed.

INVERTED TOE NAIL.

This is located in one of the great toes, and may be known by an inflamed and tumid state of the end of the toe, the tumidity of which so completely invests the sides of the nail that in its growth it has to cut its way into the flesh, the direct lesion of which lies in an inflamed state of the capsular ligament and synovial membranes of the joint next to the nail. This inflammation is induced by defective nutrition, and, like all other local inflammations, the fault lies in the presiding nerves which are strictured at their spinal exit, that is as chronic in its duration as that of the inflammation in the toe; consequently nothing can be gained by the usual practice of dissecting out the nail while this strictured state of these nerves is continued.

The remote lesion must therefore be looked for between the joints of the sacrum from whence emanates this branch of the internal sciatic nerve. The indications of cure are to restore the vital nerves, relieve the morbid sensitiveness in the toe, and the congestive encroachment upon the nail will soon subside.

A usually symmetrical trimming of the nail should be done, if needs be, but no part of the nail should be dissected out.

If the toe is painfully swollen, apply slippery elm bark poultices, and add a teaspoonful of laudanum in each poultice, and change them before they get dry. Continue their use through the day-time; and for the night apply a good quantity of the white precipitate ointment, sufficient to keep it moist during the night, and continue the use of the ointment until the swelling demands the use of the poultices. This is the best course of external treatment that can be pursued: Bathe the spine at the small of the back and over the sacrum with a good stimulating liniment once per day. When first taking up this case, begin at once the following internal treatment: ℞ Decoction of hops ℥iv, nitrate of potassa xx grains; mix. Dose, ʒii, every hour up to bed-time. Take four sugar-coated one-half grain podophyllin pills, and continue the use of the decoction the next day until it is all taken. Then use the T. of the polen of hops ʒi, for a dose, diluted in sweetened water ℥i. Take three such doses per day, one before each meal. Use it continuously until the recovery is complete.

BUNION.

A bunion is known by a chronic enlarged state of the large joint of the great toe. This inflammation at first only attacks the capsular ligaments of the joint, but by the aggravating cause being long continued, it is extended to the synovial membranes to augment the secretion of the synovial fluid or joint water that forces apart the joint at the outward part and tips the toe abruptly inwards, at the same time the outward portion of the joint becomes very much distended and thickened. When a bunion is neglected and allowed to augment, it often becomes a very troublesome pest for a life-time. It primarily may be caused from a bruise, or from wearing a tight or too hard a boot or shoe. But the joint has but a poor nutritious support, and by its chronic proclivity, we may justly refer it to the same cause that induces the inverted toe nail. (Which see.)

TREATMENT.

First, clear all glandular obstructions by giving ℞ Decoction of hops ℥iv, nitrate of potassa grs. 15; mix. Dose, ʒii every hour during the day-time until it is all taken. At bed time, after using this decoction as much as six or more hours, take two sugar-coated half-grain podophyllin pills. After using all of the diuretic decoction, prepare and take the following: ℞ Hops, a large teacup pressed full; fill it with boiling water; let stand and cool. Take one-third of it at a dose, and take three doses per day for ten or fifteen days, and two of the half-grain podophyllin pills once per week.

For external treatment: ℞ Oil of sassafras ʒii, T. capsicum ʒiv, T. of opium (laudanum) ʒvi, alcohol ʒiv; put the sassafras oil in the alcohol first, to cut it; then mix. Wet cotton batting with this liniment, and do up the toe with it and keep it moist until the pain subsides. Then do it up in the white precipitate ointment until it gets well. Also, apply this liniment to the small of the back and spine down once per day.

In diet and drinks avoid the use of everything sour, and be very cautious in dress to prevent taking a cold.

CORNS.

Corns often become very painfully troublesome, to prevent which soak the feet often in water as hot as can be well borne, making a liberal use of castile soap. Then use the treatment recommended for bunions.

INFLAMMATION OF THE GROIN.

The seat of this disease is in one of the lymphatic glands, a cluster of which are located in the groin.

This disease is manifest by a painful tumor, that increases in size and tension for about twenty days before it suppurates.

This disease is caused in both sexes by inflammation of the urethra, and other membranes of the sexual organs.

When it occurs while a person is affected with a venereal disease, it is called a *bubo;* under other circumstances a *phlegmon.*

TREATMENT.

In the primary stage give podophyllin grs. ii, nitrate of potassa grs. 15, cold water ℥iv. Take ʒiv for a dose every hour for two hours ; then take the podophyllin, and continue the solution until it is all taken. At the same time apply the spinal liniment to the tumor three times per day, and follow with the white precipitate ointment. This treatment will generally discuss it in a short time. But in its advanced stage, where suppuration is inevitable, poultices of slippery-elm bark ʒi, laudanum ʒi, one egg well beaten ; mix into a soft poultice; add water if needed. Apply it to the bare surface of the part affected. Repeat a fresh poultice as often as it dries. Repeat this until it will do to open with a lancet.

The physician should bear in mind that the femoral artery and the internal sciatic nerve lie beneath it, and must only carry the lance into the abscess.

AXILLA ABSCESS

Occurs under the arm. They are usually caused by habitual glandular obstruction. They are slow to mature, and apt to recur after their habit is once formed. Use the treatment for inflammation of the groin.

WARTS.

Warts are dermoid excrescences that disfigure the part more than injure health. Apply the following to the warts: T. of capsicum, spirits of turpentine *aa.* ℨii; mix. Saturate the warts with this preparation five minutes six times per day until they disappear. Put the wart in the mouth of the phial, and turn the phial over it.

Another is recommended by authors, but the author has had no experience with it; but as it is simple, and the plant common, it is inserted: Apply the milky juice from the pod of the green silk weed, and keep the wart wet with it until the wart comes off, which requires a few days.

RUN-AROUND.

This disease is manifest by a reddened inflammation that invests the roots of the finger nail, one or more, and sometimes all the fingers are attacked by it.

This inflammation is obstinate to yield to ordinary treatment, and very slow in maturing the recuperative state.

The immediate cause is congestion of the fibres that support the growth of the nail. The approximate cause is generally an injury sustained from a blow; but sometimes in venereal cases it attacks all the fingers.

TREATMENT.

For a case suffering from an external injury, the following external treatment will suffice: Make a poultice of fine ground slippery-elm bark ℨiii; add water enough to form a poultice, and do the finger up in it, and change it as often as it begins to get dry. Thus recruit the poultices and apply them for three days; then apply the white precipitate ointment, and keep it moist with it continuously for four days, and it will become quite well. The same external treatment is very well for venereal run-arounds, but the following treatment will, in addition, be required: Balsamic diuretic ℨi. Take four doses per day, and one grain of podophyllin every fourth day until the recovery is complete.

HYDROCELE.

This has hitherto been one of the most difficult diseases to treat successfully that physicians are called to. Much time and effort have been expended in research for its successful treatment. But happily, with improved pathology comes improved treatment. *Hydrocele* signifies a collection of serum in the tunica vaginalis in the scrotum.

Symptoms : It forms a pear-shaped swelling, smooth on its surface, free from pain and tenderness, causing mostly a little uneasiness by its weight.

Among the best diagnostic signs of a hydrocele, I would specify its transparency, its fluctuation, its commencement at the tunica vaginalis, its gradual extension upwards, its pyriform shape, and the circumstance of a portion of the spermatic cord between the abdominal ring and the upper part of the swelling remaining free and unsurrounded by the fluid. We are able to discriminate a hydrocele from a sarcocele, or diseased testicle, by the latter being much heavier, more globular or oval, and flatter at the sides than a hydrocele; by its being also more solid, and productive of a peculiarly sickening pain when compressed; by its being attended with a greater degree of pain in the loins, and very frequently with a very unhealthy, sallow look, which is not by any means a characteristic of hydrocele, which often occurs with very healthy-looking persons.

The cause of this dropsical accumulation may be chargeable to an obstructed state of the nerve that ramifies with the capillary arteries of the congested membrane, either at the spermatic plexus, or by a stricture at the abdominal ring through which it passes, causing a chronic or partial suspension of nutrition in the membrane, inducing an effusion of serum into the sack. Also, the fault may be divided between the strictured state of this nerve and a deranged state of the lymphatic ganglia in the groin, that induces inactivity in the absorbents to take up the redundance of the serous excretions accumulating in this sack.

The indications of cure are, to relieve the strictured nerve, that nutrition in the congested membrane may be resumed, and with it the cessation of the dropsical effusion; also, to stimulate the lymphatic glands in the groin to a full state of activity, and to correct any derangement that may be found in the glandular system affecting the purity of the blood.

TREATMENT.

The following consistent course of external treatment has proved to be adequate to relieve the strictured nerve, and with

it comes active resumption of nutrition to suspend the congestion and dropsical effusion :

First, have a suspensory sack made to overcome the tiresome weight of the parts upon the testis cord. Provide a wash-bowl of soft cold water and a sponge ; then apply a strong tincture of capsicum to the scrotum to induce a severe prompt nervous rally to the part, to restore the nervous circulation in the nerve to the part. When it becomes unbearable, apply the cold water to mitigate the severity of the smarting ; after the part becomes comfortable from smarting, apply a free quantity to it of the white precipitate ointment ; then apply some T. of capsicum to the groin and over the spine at the small of the back and hips, and directly after apply some of the ointment over the groin. Use this application morning and evening until the dropsy disappears.

For internal treatment use the following : ℞ F. ex. American gentian, wahoo, yellow-dock, hops, uva. ursi., *aa* ℥i, nitrate of potassa grs. 60, fl. ex. cypripedium ʒvi, T. wintergreen ʒiii ; mix. Dose, one teaspoonful diluted in sweetened water ; give from four to six doses per day. The intention is, to regulate the quantity given per day to move the bowels twice per day. Suspend the treatment when the dropsy subsides, and the part is able to bear its suspensory weight.

If the affection is a sequel to venerea, in addition to the above treatment use per day three one-drachm doses of the balsam diuretic, and two grains of podophyllin once per week.

HERNIA.

Hernia signifies a protrusion of any viscus from its natural cavity ; but the word here is restricted to the protrusion of some portions of the intestines and its investing omentum sack. The viscera most liable to hernial protrusion are the small intestines, omentum, and arch of the colon.

Hernia is divided into several species : 1st, According to its *situation*, as the *inguinal*, that protrudes by the side of the testicle cord in the male, into, or towards the scrotum, and by the round ligament of the female into the labia ; the *crural* that protrude by the side of the crural artery nearer the groin, and the *umbilical*, at the umbilicus, which is mostly confined to

babes. Hernia is usually the result of violent bodily exertion, as lifting heavy objects, especially if being previously debilitated, or unused to so great muscular exertion.

A hernia is said to be *reduceable* when returnable into the abdomen; *irreduceable*, when not returnable into the abdomen; *strangulated*, when subject to some constriction which naturally prevents their return into the abdomen, but also interferes with the passage of their contents and with their circulation.

The *oblique* inguinal hernia is the most common. It takes precisely the same route as the testicle takes in its passage from the abdomen into the scrotum. It commences as a fullness, or swelling, at the situation of the internal abdominal ring, a little above the centre of Poupart's ligament; next it passes into the inguinal canal. If the protrusion is allowed to increase, it will project through the external ring, and descend into the scrotum of the male, or the labium of the female. To return a reduceable hernia, place the hips higher than the chest and while lying on the back grasp the tumor with one hand, and make tact with one finger of the other hand upon the centre of the tumor, and press it slowly and gently, until it is carried into the abdomen. Then, to prevent a recurrence of its displacement, a truss should be worn, so admirably adjusted over the seat of the rupture, with pressure adequate to keep it from slipping out by any ordinary lifting or coughing. The great fault in many of the models of trusses, is their elasticity, pressing too deeply when not needed, and being too weak for resistance when needed. The model needed is an unelastic steel bow to fit to the hips, properly covered with soft leather, and a smooth, wooden bearing, which apply directly on the orifice, and bend the bow to a direct fit, that shall not annoy with undue pressure, nor yield to any needed pressure. With a good, soft 1¼ inch-wide belt to complete the circuit, will render a truss complete, that will keep the orifice so well closed that many fresh ruptures have been well united by this means to a radical cure. But to this end the breach must not be subject to dilatations.

The symptoms of a strangulated hernia are, pain in the part and at the pit of the stomach, with vomiting. When in this dangerous case, counsel is needed without delay, and a surgeon should be called. A delay of the relief will in a short time be attended with the fatal symptoms of gangrene.

WOUNDS.

Incised wounds are those made by clean-cutting instruments. *Punctured* wounds are those made by instruments the length of which greatly exceeds their breadth, including stabs and pricks of all sorts. The *lacerated* in which parts are torn, and the *contused* effected by bruising, are the chief varieties. The *incised* are produced with the least violence, and generally admit most easily of repair. The *punctured* are dangerous from their depth and from the possibility that deep blood vessels or viscera may be injured, or that deep-seated extravasation of blood or abscess may follow. The *lacerated* and *contused* wounds are produced with great violence, less likely to heal and more prone to slough or suppurate. They do not however, in general, bleed so much as incised wounds, because arteries, when torn, contract more than when cut.

TREATMENT.

The treatment of all wounds comprises four indications: 1st. To check bleeding. 2nd. To remove foreign bodies. 3rd. To bring the divided parts into their natural position andkeep them in union. 4th. To promote adhesion.

First. To *check bleeding*, moderate pressure, a raised position, and the application of cold or an astringent will be sufficient in most cases; but if an artery has been wounded, or the bleeding prove obstinate, measures must be adopted to secure the artery with a ligature, if possible.

Second: The *removal of all foreign bodies*, if any are in the wound, should be effected as soon as possible, by the fingers or by forceps, or sponge and water. Dirt, gravel, etc., are best got rid of by effusion with water. All clots of blood must likewise be removed.

Third: In order to *bring the sides of the wound into contact*, the part must be placed in such a position as will relax any muscular fibres that have been divided, or that lie under the divided parts. Then the edges must be made to meet as nicely as possible. On this point the utmost diligence should be used, because the more perfectly the parts are adjusted, the less chance will there be of suppuration, and the more speedy and free from deformity will the cure be. The edges of the wound may then be kept in their place by cross strips of adhesive plaster, one end of the plaster being first applied to that side of the wound which is loosest, and the other being brought across. Then a compress and bandage may be applied to keep on the dressings, and protect the parts from injury, and should be applied with such a degree of firmness as feels com-

fortable, and will have the effect of preventing bleeding and other exudations.

There are two principles in the healing process that we must regard in the dressing of wounds. One is to exclude the corrosive air to preserve the forming granulations. The other is to preserve from wasting, leakage of the plastic lymph that serves to conduct the electric round of current through it from the afferent to the efferent end of the broken fibres, and also the lymph serves as a matrix in which to lay the connecting part of the new fibres. When the flap of the skin to be adjusted is large, stitches should be used, first to bring it into position; then perfect the sutures with adhesive straps.

To relieve from excessive pain, give three-grain doses of diaphoretic powders, and repeat them from two to four hours, or often enough to afford relief and some rest, and also administer a diuretic and laxative. For bad contusions and gun-shot wounds, consult works on operative surgery.

BURNS AND SCALDS

May only induce redness. In such case dip it quickly into cold water, and let it remain for fifteen minutes; then keep it ointed for a day or two with the white precipitate ointment. Slight blistering the same. But when larger surfaces of the cuticle peel off, a dressing of cotton batting dipped in equal parts of unboiled linseed oil and lime water, and done in a manner to exclude the air, and change it daily until the cuticle is formed. Diuretics, anodynes and laxatives are indicated.

BILIOUS COLIC.

This disease is known by severe colic pains in the epigastrium, that are very severe for a few minutes, and attended with severe retching to vomit; then subside with remissions of from fifteen to twenty minutes. These fits of vomiting go on with obstinate persistency, often forty-eight hours, or until the patient sinks with exhaustion, unless proper aid is sooner furnished.

The cause is most usually a biliary calculi lodged in the ductus coledochus, at its passage into the duodenum, and the systemic effort manifest is designed to dislodge it.

The indications of cure are to aid the expulsion of the calculi. The only successful course the author has found to give prompt relief in this case, has been through the administration of a prompt lobelia emetic, which he has never known to fail of giving the proper relief as soon as the vomiting became energetic. The patient becomes quiet, and the physician may consider the treatment ended.

PERIODIC VOMITING.

This is a case of quite frequent occurrence, wherein the patient is attacked with a fit of vomiting, and remissions for fifteen or twenty minutes, minus the colic pains, but accompanied with great thirst. These paroxysms of vomiting recurring in a given length of time and very persistent in evacuating any fluid taken, and, unless properly treated, very slow to overcome.

The direct cause is duodenal congestion, caused by a sudden renal obstruction, that was turning its secretions into the circulation, when the pancreas and liver were in a state of secretory activity to depurate promptly these acrid renal secretions from the circulation, and passes it into the duodenum with the bile. This acrid bile speedily irritates the duodenal membranes, and brings on the thirst and vomiting, which recurs as often as a fresh emission of bile passes this intestinal gate. The indications of cure are to relieve the renal obstructions and protect the duodenal membranes.

TREATMENT.

First, give tris. nitrate of bismuth grs. x, wet up in a spoon of cold water. Then commence the use of the following solution to open the obstructed ducts in the renal organs: ℞ Nitrate of potassa grs. 25, put into water ℥iv, that had three or four good-sized hardwood live coals quenched in it, and add T. capsicum m. x. laudanum m. x.; mix. Dose, ʒii. Take such a dose every fifteen, twenty or thirty minutes, according with the persistency of the vomiting, repeating the dose afterwards when the fits of vomiting recur the most frequently. A second dose of bismuth may be given in two hours, if the vomiting is still persistent. Apply cloths wrung out of hot water over the

kidneys, and change them to the epigastrium. This course will succeed as soon as the renal organs become relieved of their obstructions, and have a little time to depurate the circulation of this acrid element.

EAR ACHE.

Caused by congestion of the parotid gland. The following the author has not known to fail in giving prompt relief: ℞ Tepid water ℥i, T. lobelia m. iii, T. opii m. iii.; mix. Fill the ear and let it remain until the pain subsides; then empty the ear, and wet some cotton wool in it and plug up the ear.

WETTING BED AT NIGHT.

Use the balsamic diuretic in half-drachm doses four times per day until relief is given. Another: Spirits of turpentine in one-third drachm doses in milk; give such a dose every third night, for three doses only. Another: Spirits of camphor m. iii, given in a tablespoonful of milk; give such a dose every night at bedtime, until the object is attained. This last has relieved some cases; others have had to resort to the first prescription; or, the case may be one of diabetes: in such case, follow the treatment laid down for that disease.

THE FEMALE ORGANS OF REPRODUCTION.

THEIR FUNCTIONAL USES AND DERANGEMENTS.

The uterus in its unimpregnated state is about two and one-half inches long, and one and one-half wide at the top, and it being pear-shaped, it terminates in the neck below, which is about one-half an inch across; its walls are very thick and the

cavity very small, which opens through the neck into the vagina. Its appended organs are the fallopian tubes and the ovaries. The fallopian tubes are two in number, forming canals that connect with the upper angles of the uterus. They are about five inches long. They proceed from the uterus in a transverse direction to some distance, when they form an angle and curve downward toward the ovaries.

The ovaries are two flattened bodies of about one inch in length, one of which is situated on each side of the uterus, on the posterior surface of the broad ligament, and are invested completely by a process of the posterior lamen, which forms a coat, and also a ligament for its attachment to the uterus, called the ovarian ligament.

The uterus is situated in the pelvis, between the bladder and rectum, and is enclosed in a duplicature or fold of the peritoneum. The neck, or the lower portion of the uterus, is united to and protrudes into the vagina. That portion which protrudes into the vagina is hard and oval, and divides the opening into the neck of the uterus into two lobes, called the lips of the *os tincæ*, or *os uteri.*

The canal of the vagina forms a cavern under the uterus, the bladder above rests upon it, and the rectum is behind and beneath it.

The office of the ovaries is to produce the ova, and hold them in reserve for impregnation, which are not disturbed until the first molecules are transmitted to them for the primary work of unfolding the physical structure of the new being.

The office of the fallopian tubes is to form a passageway for the impregnated ova into the uterus, when they escape from ovaries.

The office of the uterus is that of a matrix, to receive and properly care for this embryotic being, in harmony with the systemic provisional laws during the full time of gestation, which is 280 days; at the close of which time parturition begins, and the infant is expelled from the mother by the periodical contractile throes of the uterus.

In order to properly comprehend the functional work of this group of reproductive organs, or their derangements, it will become necessary first, to properly consider their nervous arrangement, bearing in mind the principle that the vital nerve sent to an organ is endowed with a capacity to construct the order of its form, in harmony with the laws of its functional use; and that the vigor of the organ is ever dependent upon the integrity of its vital nerve for ability to properly execute its functional labors.

The group of nervous ganglia that compose the spermatic nervous centre, are the ones that are assigned to these organs.

These ganglia being hurdled together, to bring the organs into nervous sympathy with each other, so as to be enabled to forward the demanded element to the respective organ, as their circumstances may require to fulfill their respective offices.

The presence of the sperm in contact with the excited vaginal mucous membrane, provides the first chemical interchange of elements, designed to compose the physical structure of the conceived being, by stimulating the vaginal efferent sympathetic nerves to send from the ovarian ganglion, in the spermatic group, the vital molecules to the most mature and impregnated ovarian vesicle necessary to its escape. This expansive growth bursts the external coat of the graafian vesicle, and the ovum escapes and is transported through one of the fallopian tubes into the uterus.

At this same time, the uterus is receiving the vital attention in preparing for the reception and safe keeping of the embryo, by secreting an albuminous phosphate to seal the lower passage of the uterus, to prevent its loss, into the vagina.

Any derangement of the dermoid tissue of the vagina, that disqualifies it for this first germinal impression, bars the first step in conception. Therefore, the importance of much care in preserving the health and purity of this membrane.

The depuration from the circulation of certain impurities with the menstrual fluid, too pungent for this membrane, inflames and chronically debilitates and partially paralyzes it, so as to disqualify it for this high functional office.

There are many other causes that induce sterility, Inflammation or paralysis of any of this group of organs, will disappoint the completion of the work of conception.

THE MENSES.

The design of this habit is to give the organs of fecundation renewed energy; to arouse the spermatic nervous circulation suitable to execute the first germinal processes in conception. By this habit conception is rendered practical, soon after the subsidence of each of these floodings. Every adult female meets this habit, which in this climate is between the ages of twelve and sixteen years. In the tropical climate, females mature much earlier than in a temperate one, and it not unfrequently is the case that they become mothers at the age of twelve years.

RETENTION OF THE MENSES.

When the menses do not appear at the usual period of life, and the person is of full habit, we consider the menses as being *retained*. This delay may be due to a deranged condition of some organ or foreign part of the system, that diverts the usual nervous action from the part; or, the functional action of the organ may be too feeble to institute it. If it be retained by the derangements of other parts, the relief will depend upon the removal of such derangements by the treatment given under their respective heads. When it is due to inertia of the organ, give: ℞ T. rhei ʒiij, T. of American gentian ʒiij, T. lupulein ℥j; mix. Dose, ʒss in ʒiij of sweetened water; take three such doses per day, until the object is attained.

OBSTRUCTED MENSTRUATION.

By obstructed menstruation is meant an impediment to their recurrence, after the habit has been established—or when the symptoms are well marked and no appearances have occurred. In such cases it may be due to an imperforate uterus or vagina. If it is due to an imperforate vagina, a longitudinal section of the hymen should be made sufficient for its passage, by an experienced surgeon. If it is due to an imperforate uterus, a gum-elastic bogie should be inserted into the vaginal orifice or neck of the womb, and carried through into the uterus, which generally very easily ruptures the feeble membrane that obstructs this passageway of the uterus into the vagina. If it is due to other causes, they should be properly diagnosed and cared for; and a good emmenagogue, such as is recommended for the retention of the menses, should be taken as there directed, beginning its use one week before the usually marked period, and suspend it after two weeks, if it does not succeed, and take it up again as before, one week before the time marked, etc. It will succeed by using it through a few periods in very bad cases.

MENORRHAGIA.

By *menorrhagia*, we are to be understood to mean, an immoderate flow of the menses. The quantity of the menstrual fluid usually secreted at each period differs with persons, each having a healthy habitual quantity, which, with the majority, will average about four ounces. Yet, some never have more than one ounce, while others are regular on six. Either side, out of these bounds, may be considered irregular in quantity. Each lady, also, has her own healthy habit of duration of time for the menstrual flow; some not more than two days, while others never stop short of six days; but the average time is four days. Outside of these bounds of usual habit must be considered an irregularity in the time of their duration.

Among the causes of immoderate menstruation are excessive fatigue, the use of drastic cathartics, fear, grief and anger. Temperance, or moderation in all of these excesses, will do much to moderate this condition.

Leucorrhoea, by its debilitating effects upon these organs, is one of the most aggravating causes to induce an immoderate flow, and to protract the time of its secretion. Designedly repeated abortions are not only a fearful cause of this derangement, but thousands have terminated their lives early by it. The poisonous effects of patent or quack abortive remedies induce abortion, by prostrating the vital powers of the reproductive organs, to a degree that their constitution seldom recovers from the shock. The return much short of their regular time, or their continuation beyond their usual time, are evils that should not be neglected, but should be corrected by proper medicinal agents.

TREATMENT.

℞ Hyos. ex. gr. lxiv. Dissolve this extract in hot water ℥ij, and add s. syrup ℥ij, T. wintergreen ʒss; mix. Dose, when the flowing is immoderate, ʒj, and repeat it every two or three hours, as the circumstances may seem to indicate, until it is sufficient to moderate; and when the flowing has passed four days, continue it until it stops.

To guard against a return short of the full period, one or two doses of ʒss per day should be taken.

UTERINE HEMORRHAGE

May be induced by various causes that tend to produce the one pathological condition of the uterus on which the hemorrhage depends.

It usually occurs with females who are afflicted with chronic uterine debility at the time of the menstrual period.

Severe driving pains, under undue arterial force upon the lax and half-paralyzed membranes of the uterus, inflames or congests them until the vessels give way to sanguineous effusion at first, that if continued augments into a hemorrhage.

This hemorrhage is not unfrequently induced by emmenagogues and abortives, that over-drive the functional nerves to a paralysis that allows the heart to congest the organ to a fearful extent, when thus disarmed of its usual nervous support.

Undue congestion of the organ is always its immediate cause; and here bear in mind that paralysis of the vital nerves is always present as a principal cause that allows the part to become congested. Undue arterial excitement, induced by running, brisk walking, or any long-continued, energetic muscular motion that causes a rapid motion of the heart, will force an undue quantity of blood upon the menstrual vessels, until they become congested, debilitated, and give way to hemorrhage, by being distended sufficient to allow the globules of arterial blood to escape between the meshes of the fibres that compose their tubular walls.

The indications of cure in this case are, those which point to relief in all internal hemorrhages, viz : to quiet the excessive motion of the heart by rest and arterial sedatives. Secondly, to give support to the prostrated vital nerves to enable them to overcome the congestion by rendering them more efficient aid in nutrition by the use of proper nervine supports.

The prescription given for menorrhagia will not fail to give prompt relief when given in doses of ʒj, every hour for three doses. Then extend the time to two, three, or four hours, as the case may seem to indicate, until the flow moderates or suspends.

DYSMENORRHŒA.

PAINFUL MENSTRUATION—MENSTRUAL COLIC.

Dysmenorrhœa is a Greek word that signifies a difficult monthly flow.

The flowing is preceded by severe pain through the loins and lower part of the abdomen. These pains are sometimes so intense as to cause the patient to take her bed.

This derangement is due to a too rapid nervous concentration upon a morbidly sensitive organ, so rapidly as to induce painful congestion before the time required for the secretion to be induced ; then the congestion interferes with the secretive action until the congestive driving exacerbation begins to subside; then the secretion commences, and the painful congestion is soon relieved. Consequently, the relief that is obtained from active diffusible stimulants is obtained by diverting the systemic concentrated forces from over-driving the organ.

This over-driving action at each period does not allow the uterus an opportunity to recover from its morbid sensibility before it is congested again, and of necessity the derangement continues to be troublesome each period.

The indications of cure are, to forestall this abnormal determination to the uterus, by the use of proper nervines that tend to render this morbid sensitiveness more obtuse, so as to secure a more gradual concentration of the systemic forces, that will induce the secretion without congesting the organ. After the secretion is fairly established, the use of the nervine may be suspended. If this course be successfully carried out for from four to six months, the patient will be relieved from this painful habit at this period.

To secure this object, begin the use of pulsatilla four days prior to the period. ℞ Pulsa. globules xv for a dose. Take vj doses per day until the flowing commences. Also, as soon as the symptoms begin to give signs of its approach, take diaphoretic powders in three-grain doses every three or six hours, according to the necessity of the case, the object being to moderate, instead of suppressing, the symptoms.

TURN OF LIFE,

OR, CESSATION OF MENSTRUATION.

The cessation of menstruation, commonly called *the turn of life,* obtains with a very great majority of females, at the age of forty-five; yet persons of unusually great longevity go much beyond that time, while a great minority suspend before the age of forty. This period is very properly considered a critical one for females of delicate health, for it may be fraught with peril through which she can be safely conducted only by a skillful and experienced physician. It is, therefore, very important that all the unpleasant sensations which may be experienced, during this time of the turn of life, should receive due attention.

With the robust constitution, this period may pass without any unpleasant symptoms; the monthly flow gradually suspends without disturbing their usual good health, and after which they become more solid and heavier than previous to making this change.

Upon the integrity of the functional nerves of this organ will depend the ability of the system to safely make this change in harmony with provisional law. Not unfrequently this change has to be made while these functional nerves are laboring under severe derangement, having sometimes to encounter an over-driving action to depletion, and great prostration. Again, on the other hand, the suppression is so abrupt as to induce severe apoplectic determination to the head, and obstructing the brain and nervous circulation as to cause a numb sensation, and occasionally a partial paralysis of one hemisphere of the system.

The danger of making the patient paralyzed consists in risking too much to nature, when its forces are too much divided among other systemic derangements. The time required to make this change is from one to two years; the longest time is required by the invalid, who, during this time, experiences a great variety of symptoms, such as vertigo, palpitation of the heart, head-ache, renal and liver obstructions, indigestion, constipation, piles, bloating of the abdomen and extremities, the brain becomes incompetent to retain the memory, and the usual expression is "that my brain feels so much oppressed that fears are entertained of losing the mind." Suffocating feelings in the chest become distressing, and the tendency to chills evinces symptoms of asthma.

Every derangement should be properly diagnosed and gentle treatment instituted for them, in order to regain thereby the

healthy balances of the nervous system suited to make this important change with their designed ability.

If a female of delicate health shall be thus successfully carried through this period, her health will be much more permanent afterwards, it seeming to renew her systemic powers for longevity, and her last will be her best days. On the other hand, if dangerous symptoms shall be neglected, a rapid decline of health not unfrequently results.

PRURITUS.

This is a very troublesome disease, and one that females are very liable to have who are troubled with retension of the menses. This disease affects the female directly after the close of the menses.

It is manifest by an itching, stinging sensation in the vulva, which causes the female to rub and scratch the part until the membranes become tumid and inflamed before the itching will subside; then it will only be quiet for a short time. These symptoms generally last about ten days.

This disease is caused by acrid leucorrhœa coming in contact with the parts affected, which poison paralyzes the nerves of the membranes and induces congestion.

It is presumed that gonorrhœa is the most frequent cause of this disease, but nevertheless it is often induced by inveterate leucorrhœa.

TREATMENT.

Give the balsamic diuretic in half-drachm doses four times per day, podophyllin four half-grain sugar-coated pills, and repeat, ten days apart. With each dose of these pills give a solution of nitrate of potassa grs. 15, bi-carb. of soda ʒss, in water ℥iv. Take ʒiv every half-hour until it is all taken; after taking two doses take the pills, or begin the solution at noon, and take the dose of pills at bed-time.

Use an enema of nitrate of silver grs. 15, soft water ℥iii. Use ʒii, per vagina, with a glass female syringe. Twenty minutes after the use of each of these enemas, follow with the use of one made of tannin grs. 15, soft water ℥iii; use ʒii at once. Every time after using these enemas, apply some of the white precipitate ointment on the parts.

The same solution may be used on the parts with a sponge or piece of muslin. When the disease is not of a suspicious origin, care should be used not to allow the solution of the nitrate of silver to come in contact with the linen, else it will stain it black. This course will not fail to effect a cure in either order.

MIDWIFERY.

PRELIMINARY OBSERVATIONS.

The theory and practice of midwifery embraces too much to be treated at length in this work, yet, as it is intended as a compendium of the most important principles embraced in medical science, I deem it important to furnish a condensed article under this head, advising, at the same time, all who are intending to make a profession of this branch of medical science, to obtain a work that treats the subject at length, such as Ramsbotham's, Dues', or Churchill's System of Midwifery. God has provided a wise arrangement of the sexual organs for conception. He has also endowed the female organs with functional powers adequate to the necessity for gestation and successful parturition. The great number of the different species of the animal kingdom, below man, rely successfully upon these instinctive powers for multiplication. The human family are not less cared for in the Divine arrangement for successfully populating the earth. Natural and successful labor, that requires no interference, forms the great majority of cases, equal to two hundred to one, that occurs, that require mechanical aid. Therefore, it is important to clearly elucidate the processes of natural labor, in order to inspire confidence in its operations, and to allow the time necessary for its successful termination without interference.

PARTURITION

Is that natural process which is instituted at the expiration of forty weeks from conception, and by which the womb expels the fœtus and placenta, and contracts to assume its normal condition when unimpregnated.

NATURAL LABOR.

This term is applied to those cases in which the head presents, and descends regularly into the pelvis; where the process is uncomplicated, and concluded by the natural powers

within twenty-four hours, with safety to the mother and child, and in which the placenta is expelled in due time. First labors are more tedious, and of longer duration than subsequent ones, chiefly due to the slow dilatation of the soft parts; by this reason I have witnessed several first cases of natural labor that were extended to forty-eight hours.

STAGES OF LABOR.

Certain occurrences take place during the process of parturition, which may be considered in three divisions, or stages: the *first* comprehends all that may occur before a complete dilatation of the os uteri; the *second* includes all that takes place between the development of the os uteri and the expulsion of the child; the *third* embraces everything connected with the detachment and expulsion of the placenta.

SYMPTOMS PRECEDING LABOR.

For several days before labor sets in there are often many premonitory symptoms which, by women who have borne children, are viewed as precursors of that approaching crisis. Among these are:

1. *Restlessness*, particularly at night, very frequently precedes parturition for many days, and is rarely to be considered as bearing unfavorably in labor.

2. *Subsidence of the womb and abdomen* is not an unusual monitor of the close of the period of gestation. It may be viewed in a favorable light, inasmuch as it indicates room in the pelvis.

3. *Glairy mucous secretion* from the os uteri and vagina sometimes occurs for days before the more active symptoms of labor. It is often streaked with blood, and tends to lubricate the parts concerned in parturition.

4. *Irritability of the bladder and rectum*, demanding their frequent relief, is another precursor of labor. The third is the only one that evinces that labor is at hand.

THE PROCESSES OF NATURAL LABOR.

SYMPTOMS OF LABOR.

I shall now proceed to the description of labor in each stage, first detailing the phenomena, and afterwards prescribing the requisite management.

The commencement of labor is dated by the patient from the moment that the uterine contractions become painful, and correctly so if the entire uterus is engaged; if they recur regularly after short intervals. But this is not always the case: the uterus not unfrequently at first acts partially, irregularly, and inefficiently; such efforts are called *false*, or *spurious pains*. A little careful observation will enable us to distinguish them from true pains, as they commence about the fundus, and are of limited extent, recur at irregular intervals, and are not attended with the mucous discharge from the vagina, and do not dilate the os uteri, or protrude the bag of water. On the other hand, true pains generally commence in the lower part of the uterus, and are first felt in the back, extending gradually to the front, recurring with regularity, though increasing in frequency, dilating the os uteri and protruding the membranes.

The true pains recur at regular intervals, gradually increasing in frequency and power, and each pain from its commencement augmenting in intensity, until having arrived at its maximum, it remains stationary for a short time, then subsides, thus presenting, as it were, a type of the entire course of pains.

The pains exhibit, however, different characteristics, according to the stage of labor, and have, therefore, been divided into two kinds: *cutting*, or *grinding pains*, and *bearing down*, or *forcing pains*. The cutting or grinding pains are indicative of, and confined to, the first stage of labor, during the dilatation of the os uteri. They are short, severe, and not very frequent, obliging the patient to suspend her occupation, and partially arresting respiration, but not inducing any voluntary effort. They are generally seated in the back, gradually extending around the loins to the abdomen and thighs.

The suffering they occasion is considerable, and although it is less than that which accompanies the stronger pains of the second stage, yet it appears more difficult to bear, and the patient gives utterance to groans and loud out cries. The outcry which attends upon the cutting pains is an excellent diagnostic mark of the first stage of labor.

During the first stage, we generally find the patient more irritable and desponding than subsequently. This distressing state of mind disappears as the labor advances, and hope, resolute courage and physical powers come to the rescue equal to the emergency, and at the time when it is most needed.

During the first stage, the stomach is apt to become irritable and discharge its contents, which is by no means an unfavorable symptom; it only evinces that the powers commonly used for digestion are being called to aid in parturition. At the commencement of labor, the orifice of the os uteri will readily admit the point of the fore-finger, and by the repeated pains

it is gradually widened so as to allow the child to pass. The rate of dilatation is slow at the beginning; it is truly said to take as much, or more, time to dilate the os uteri to the size of half a crown, than to complete the process.

Towards the end of the first stage, when the os uteri becomes pretty well dilated, we remark an increase in the sanguineous appearance in the vaginal secretions, and the accession of voluntary efforts, slight at first, but gradually increasing. About this time the membranes generally give way, the liquor amnii escapes, and by the next pain the head passes through the os uteri and enters upon tha *second stage* of labor.

SECOND STAGE.

The phenomena are now somewhat changed, especially in their intensity. The pains are more frequent and of longer duration ; the breath is suspended during a pain, and the outcry suppressed, except at its termination. The character of the outcry is therefore as good a test of the second stage as the first.

At the accession of each pain the patient holds her breath, and seizing hold of something with her hands, brings the muscles of the extremities of the back and abdomen to aid the expulsive force of the uterus. These are the *bearing-down pains* of the second stage.

If the second stage is prolonged, the patient often feels heavy and sleepy, and may doze between the pains—mostly the result of fatigue. It is a favorable symptom when the patient appears to refresh her strength by it.

If an internal examination be made at the beginning of the second stage, we shall find the vagina dilatable, its walls rugous and flabby, and prepared to yield to the pressure of the head. The head will be perceived at the upper part of the pelvis, filling it more or less completely, descending with each pain, and receding at its conclusion; the advance exceeding the recession, and the excess marking the rate of progress of the labor.

At a later period, the head will be felt on the floor of the pelvis, where it meets with considerable resistance, but it is overcome by the mechanism already described. We observe the same repeated advance and recession, the head each time propelled a little further than before, and often with a kind of spiral movement, until, after a time, proportioned to the difference between the force employed and the resistance, the obstacles yield, and the head presses upon the perineum, which undergoes the same process of dilatation.

At this period of the labor, when the head is distending the perineum and dilating the external orifices, both the suffering and the exertion reach their maximum point; and yet it is

beautiful to observe, how cautiously and how securely the process is effected. Adequate expulsive force is called into action, and if it were continuous, nothing could save the patient from injury; but each pain is just long enough to gain upon the point of advances made by its predecessor. The head is detained for a few moments at its furthest point of advance, then it recedes; this is repeated until the perineum is completely softened, and the passage dilated. At the latter part of the second stage, the pains are often what are called *double*, i. e.; they succeed each other so quickly, that a new one commences before the former has quite terminated. At length, the force conquers all resistance, and with a throe of agony the head is expelled, after which there is a short rest equal to two or three pains, then the uterine force is again exerted to expel the body of the child.

The second stage is now completed. The suffering which was intense, is exchanged for perfect ease, and the sense of relief is inexpressibly great.

The third stage includes the detachment and expulsion of the placenta or after-birth. In some cases, the contractions which expel the child expel the after-birth. In most cases, however, it is partially or wholly detached, remaining in the uterus or vagina, from whence it may be expelled by the natural powers alone, or by the aid of gentle traction. There is an interval which elapses after the expulsion of the child, before the uterus again contracts to expel the placenta, which varies somewhat in different cases, apparently according to the fatigue the organ has undergone. Statistics make this interval to average about twenty minutes. From this data we may conclude, with the highest authorities, that, in natural labor, the placenta ought to be expelled within an hour or an hour and a half, and that when the interval exceeds this, the case fairly comes under the order of *retained placenta.*

When this interval, whatever it may be, has elapsed, the uterus again contracts, but much less forcibly, and by one or two pains the placenta and membranes appended are expelled.

Its expulsion should be aided by winding the placental cord around the right hand, and the index finger of the left hand should be passed up the cord to the placenta, and gentle traction should be made at each pain; but great care should be used not to break the cord, lest we may be deprived of this means of help. If the child be healthy and it has not suffered from pressure, etc., it will cry as soon as it is born, and when respiration is established it may be separated from its mother by tying firmly the umbilical cord with a strong silk or linen cord two inches from the umbilicus, and another two inches from this toward the placenta; then divide the cord half-way

between these ligatures with a pair of round-pointed scissors, all of which should be done under the bed-clothes, without exposing to view the mother or child. It should then be wrapped in flannel, and handed to the nurse.

The most common cause of protracted labor is a right or left obliquity of the head of the child, causing it to rest upon the pelvis. This condition is manifest by a fullness upon the side where it is lodged upon the pelvis and a vacuum upon the opposite side. This obliquity can be remedied and the head made to present correctly in the pelvis, by making tact with fore-finger during the absence of a pain, upon the head near the obstructed side of the pelvis, and gently press the head backwards until it is clear from the pelvis; then press it to the opposite side, until both sides present equally. An early examination should be made to ascertain the state of the presentation, that any abnormal presentation may be thus adjusted as soon as possible.

As soon as the after-birth is delivered, a dry napkin should be applied around the patient, over the region of the womb, and made comfortably tight, after which, three grains of diaphoretic powder should be given to quiet the after-pains and support the nervous system. After she has been allowed to rest quietly for a short time, she should have all of her soiled apparel and bed-clothes removed,without much exertion on her part, and she be placed with her child quietly in bed; and after she has taken a cup of tea and a little food, she should be allowed to sleep. Three grains of diaphoretic powder should be given every three hours until the after-pains subside. On the second day, she should take one grain of podophyllin combined with two grains of diaphoretic powder, to act upon the liver and glandular system and move the bowels, thereby preventing febrile symptoms and a broken breast, that so frequently occur when these precautionary measures are not used.

The milk is not secreted immediately after delivery. At the end of the second, or beginning of the third day, the breasts are larger, heavier and more tense; the patient suffers from rigors, heat of skin, pain and soreness of breasts, and the pulse is quickened. At this time the secretion commences: at first, slowly and with difficulty, but afterwards more freely. The early application of the child to the breasts aids the secretion, and prevents congestion and inflammation of the breasts. The first milk differs from that secreted afterwards, and is designed thus to physic the child.

MANAGEMENT OF THE INFANT.

The first business of the nurse after receiving the child is to properly wash it, and cleanse the skin from all the scurf that so intensely adheres to it. This can be greatly facilitated by first

rubbing it with purified olive oil, or melted fresh lard, then using castile soap and soft water made warm; this process being properly executed, the next is to properly do up the funis before putting on its garments; for this purpose, use a soft piece of muslin, three inches wide and six inches long; cut a hole through it near the middle, just large enough to pass the funis through it; when it is thus put on, lay the muslin lengthwise of the abdomen, then lay the funis toward the stomach, and fold the lower part over it, making the fold one-half inch below the umbilicus; then apply the bandage, and it is ready to be dressed. Great care should be used to prevent fatal hemorrhage at this place, and if needs be, another ligature should be applied before it is done up.

There is no relic of barbarism retained in this civilized age that equals that which is very generally practiced upon the new-born infant. This practice is to give the infant urine very soon after it is born. Another is to give it castor oil, and the third is to stuff the child with food, before it gets its mother's first milk. This is all erroneous; God has provided for all these points. First, there is a *pabulum* in the stomach which takes several days to become digested, and as this becomes diminished the infant inclines to draw the breast, which is beneficial both to mother and infant. Secondly, the first milk secreted will physic the infant as much as is required. Therefore, the proper course to pursue, is to only give a little weak catnip tea, until it is supplied from the breast of the mother.

Nothing will inflame the stomach worse than urine. Castor oil has been considered a very harmless laxative, consequently it has been long used as a family laxative for children. But here let me correct this fatal idea, for I know of no article of medicine that has been given to children, before I have been called to them in cases of fever and pneumonia, that has given me so much trouble to overcome its mischievous effects to finally succeed, as castor oil. Its first effect is to increase the peristaltic motion of the bowels, and move them; its secondary effect is to paralyze and inflame them, and obstruct the glandular system more permanently than before, requiring two or three times larger doses of podophyllin to operate on the glandular system after castor oil has been used. I never use it only to oil my buggy.

After the infant is dressed it should be laid upon its right side, to prevent the blood from escaping through the foramen ovale, which gives a blue cast to the child when it occurs. As soon as this appearance is observed the infant should be immediately laid on its right side, and these symptoms will in a few minutes disappear.

In fœtal life the blood passes directly through the septum of the heart from the right to the left side, through a passage called the foramen ovale, instead of its passing through the lungs, as it does after its birth. This opening is oblique, and somewhat valvular, and closes from left to right. When the infant lies on its right side, it closes by its gravity; when placed on its left side, it inclines by its gravity to open. This opening generally closes permanently in a few days.

Much has been said in regard to the position the female should be placed in during parturition.

During the first stage no definite position need be required, but she should be allowed to change to any position that will afford any comfort, as from the couch to the lounge, to kneel on a cushion, and lean in a chair. But when she enters upon the second stage, wherein she has a desire to place her feet against a firm substance, and to grasp hold of something unyielding with her hands, to bring into action all of her muscular powers to aid in the expulsive force, then the best position is on a bed, (of straw, as this cannot be damaged by the process), with her head and shoulders elevated. Let her place her feet firmly against the foot-board, or an extra board placed across the foot of the bed for that purpose ; then tie a sheet to the foot-posts, making it the right distance to grasp and pull upon during each pain. This arrangement will save the assistants the exhausting labor of grasping her hands and pulling with her during each pain. No parturient remedy should be given to augment the expulsive force of the uterus until the case is well advanced in the second stage, wherein the presentation has been ascertained to be correct, the stage protracted, and the powers begin to fail by exhaustion. In such case I would give three grains of macrotin, and repeat the dose once in three hours until the infant is born ; or, as a substitute for the macrotin, I have used with equal success a strong decoction made from the dried leaves of red raspberry, prepared as follows : Put as many leaves as you can press into a pint cup, pour it half-full of boiling water and let it boil a few minutes ; press it down, then strain and press out a half-pint of the decoction. As soon as it is cool enough to drink, give a half of it at a dose, and give the balance in twenty minutes. This arouses renewed energy to all the muscular powers of the system, and especially to the expulsive force of the uterus, adequate to the necessity.

MATERIA MEDICA.

Quite a diversity of opinion exists in the medical world in regard to the mode of treatment and agents to be employed by which the derangements of the system may be relieved and the weak made strong.

This diversity of opinion has divided the profession into many schools of practice. The sanaty of these various theories I do not here design to discuss, for in an abridged work like this, space can only be found for recording known principles. Our first observation for accomplishing this end may be best derived from the laws of health, under experiments for acquiring the greatest degree of muscular force. The ancient Grecian and Roman schools for developing the athletic, have furnished examples worthy of high consideration, as an acceptable means within the province of the physician, by which the valetudinarian may regain his lost powers. What belongs to the province of medication cannot be overcome by muscular discipline ; nor can medication give to the system that power that can be derived only from muscular action. The most reliable of these two provinces,by which health may be restored, is that of medication. The therapeutical agents employed by which to aid the vis vitæ to clear the obstructed organs, to tone up the nervous system, or control its undue excitability, and to fulfill any other indication, should be composed of elements that the system can dispose of without taxing its vital powers after they have efficiently fulfilled their indications.

Many times help may not be possible; then the remedy should, if given in large doses, tend to support vitality, rather than to militate against it. I have ever found the most efficient and reliable agents to fulfill the most important indications among those derived from the vegetable kingdom. And so admirably do they fulfill these therapeutical indications that they would seem to have been expressly designed by the Divine Creator, and placed within the reach of man to relieve his abnormal conditions.

These medicaments will, while fulfilling their indications, assimilate into the composition of the system. In these remedies is much of the life-generating principle that resides in the

perennial plant for reproducing its new body annually; in the pollen, the life of the germ, and in the germs of all the pristine forms of vegetable life. In the eclectic alkaloid preparations made from the various medicinal plants, these vital principles are admirably preserved; and in this constitutes one of the secrets of their great efficacy in supporting the system while fulfilling their remedial indications.

This life principle in the vegetable kingdom is the procedure to animal life, and its vital principles are readily seized upon and turned to the account of the vitality of the animal economy. Upon these principles is animal life preserved while subsisting upon vegetable food.

Thus we see that the chemistry of vegetable life as a kingdom officiates as a medium between the mineral and the animal kingdoms, by transforming the gases that compose the mineral kingdom into genial elements to support the animal kingdom. Every therapeutical indication can be better fulfilled with botanic remedies than by those of mineral composition. The three therapeutical indications in which the mineral remedies are used are: alteratives, emetics and tonics.

The chloride of mercury, (or calomel), or the blue pill, are the mineral preparations used to fulfill the alterative indication. Tartarized antimony, or tartar emetic, to induce emesis, and the different preparations of arsenic and of iron, are used to fulfill the indication of tonics.

It is not a question but what mercury, when taken, will augment the biliary secretions. It is not long since this mineral came into notice as a medicinal agent. It was first advocated by Paracelsus Bombastus, or the drunken chemist, who conceived the vague idea that one-ninth of the compound elements of the human constitution was composed of mercury, and taught the absurd doctrine that disease was the result of the deficiency of mercury in the system, and to relieve disease the deficiency must be supplied. This idea of mercury composing any part of the system has long since been exploded by the science of chemistry; but, notwithstanding that, the school that is based upon the mineral practice has sought, and still seeks, other theories by which to keep it in use, overlooking or waiving the mischief that follows in the wake of its action.

Robley Dunglison, Professor of Theory and Practice of Medicine in the Jeffersonian Medical College at Philadelphia, in his Theraputics, vol. 2, p. 291, 292, 293, thus exposes the danger of the use of this remedy: "That mercury when taken is carried into the circulation, is proven by the fact that metallic mercury is discovered in the bones, and blood when freely used. The precursory phenomena usually are, tenderness, tumefaction, and pale rosy color of the gums, except at the

very margins, where they are deep red. The gums gradually fall away from the teeth, and a white secretion occupies the portions of the teeth from which they have subsided. The mouth becomes sore ; the tongue swollen ; the teeth are tender and pressed against each other, and are loose ; the breath acquires a characteristic fœtor, and a coppery taste is experienced. In this state the mouth is said to be equivocally 'touched,' by mercury ; and it would be well if the effects could be thus limited. Either by accident or design, they may, however, extend much farther. The salivary glands may become tender and tumefied, and increase their secretion profusely ; and, when once induced, ptyalism is an affection that generally continues unmodified by medicine, or is self-limited, continuing for days and sometimes weeks ; the whole system suffers, partly from the extent of discharge, but still more, perhaps, from the suffering and irritative fever that accompany it.

"At one time, it was supposed that the mercury is thrown off in the fluid of the ptyalism ; but careful analysis by skilful chemists has entirely failed in detecting the smallest particle of the metal in that fluid.

"Such are the phenomena induced by mercury, when used for the cure of disease. In some constitutions mercury acts as a true poison, causing what has been termed *mercurial erethism*, or a febrile condition characterized by great adynamia ; in which, on the occurrence of some emotion or exertion, the individual suddenly expires.

"Besides these effects, a train of phenomena strikingly like those of syphilis have been ascribed to the action of mercury. To the aggregate of these, the names *hydrargyriasis*, *mercurial disease or cachexia*, and by some *pseudo syphilis*, have been assigned to it. Among them may be enumerated, mercurial iritis, sloughing ulceration of the fauces, inflammation and caries of the bones, periostitis, mercurial tremors, cachexia, etc. The effects of the ptyalism occasioned by mercury are sometimes awful ; sloughing of the soft part of the mouth and throat, loss of the teeth, caries of the bones, adhesions of the cheeks to the gums, and ligamentous bands preventing the depression of the lower jaw, and awful cases of deformity, are occasionally the result of the use of this remedy."

The laws by which this remedy excites the liver and glandular system, and also by which it destroys the bones and teeth, and causes gangrenous sloughings, have not hitherto been well defined. It is therefore considered important in this place to critically analyze its medicinal modes of action, and its mischievous results when taken. I have never given a dose of mercury in any of its forms in my practice, which is over a quarter of a century ; by reason of finding in the podophyllin

all that could be desired to fulfill this therapeutical indication; and in its action its results are salutary rather than injurious. Chloride of mercury (calomel) when taken, often comes in contact with free chloric acid in the stomach secreted from the chloride of sodium, in the circulation of gastric juice.

When this mild chloride of mercury, (as it is called), is taken, and it comes in contact with this free chloric acid in the gastric juice, they combine, and form the bi-chloride of mercury, which is corrosive sublimate, a most deadly poison; one that is capable of coagulating the albumen of the animal fiber and destroying it by contact. Whenever the symptoms of Dunglison's mercurial *erethism* appear, which are so soon followed by death, this bi-chloride of mercury is the mischievous cause. When mercury is taken it is rendered very divisible, under the temperature of the system, so much so as to unite with the chyle and pass into the circulating blood, to clog the termina of the capillary arteries and prevent assimilation ; and inflammation of these capillaries must result.

When the capillaries of the membranes of the bones are thus obstructed by it, caries of the bones usually follows. Much of this mercury is carried and deposited in the cells of the spongy bones of the spine and condyloid processes, and it there collects into mercurial globules, to expand and contract under heat and cold, to torment the patient with what is called mercurial neuralgia.

When the cartilages are congested with the presence of this mercurial poison, severe inflammation results ; and when it congests the salivary glands, it induces ptyalism ; and when it congests the soft parts, gangrenous sloughing results. Its action in the liver and glandular system, is first that of great nervous excitability of the organ, causing excessive secretion of bile ; its secondary effect is that of paralysis and inflammation of the organ, especially when the system is laboring under a febrile action. When it congests the spine in the intervertebral foramina, paralysis, to a greater or less extent, occurs in the pairs of the torpid nerves. When it congests the membranes of the alveolar processes, the gums slough, the processes crumble and the teeth fall out, or become loose when not carried quite so far. It is sent to the brain when the patient lies in a recumbent position; the great force of the heart under febrile action induces inflammation of that organ, and the patient dies of softening of the brain.

Tartar emetic is another very injurious medicament, the action of which requires analyzing to be better understood.

This chemical preparation is one which induces emesis, by inducing inflammation of the mucous membranes of the stomach and duodenum. It is capable of inducing vesication of

both the internal and external membranes when in contact with them. It will thus irritate every vessel through which it circulates, and when carried into the capillary pulmonary arteries, it induces congestion and obstruction of those vessels, causing hepatization of portions of the lungs, when given in cases of pneumonia.

This remedy is next to mercury in obstructing the capillary termina, and causes thereby obstruction to assimilation, and the breaking down of the parts. It will, when carried into the periosteum of the spinal vertebra, induce obstruction of the lateral nerves, and caries off the bone. Many of the severest lumbar abscesses are induced by a long-continued use of this mineral. It lessens febrile action in chronic bronchitis, by the nervous prostration it induces in the vital bronchial nerves; and, when looking for a favorable reaction of the system under its use, the systemic powers will fail to rally, and sink lower and render the case still more dangerous. If it is used in cases of fever to induce emesis, it will inflame the mouth, fauces, œsophagus and stomach, and cause a sore throat, and very soon blocks the membranes with thick, dark brown sords—dependent upon the membranous vesication it induces. Its direct action upon the animal economy is best demonstrated when applied to the external skin for the purpose of making an antimonial sore to fill the indication of an escharotic.

There are over forty official preparations of iron laid down in the United States Pharmacy, which are mostly used to fill the indications of tonics, and chemists are annually offering new combinations of this metal for use. The prescriptions most popular in use to fill this indication are the phosphate, carbonate, iodide, muriate, etc. Sincere as may be the profession in attempting to invigorate the debilitated constitution with these ferruginous preparations, I must take issue with them in regard to these preparations being the most judicious selection to fill this indication. The diseases in which the properties of tonics are most commonly used are dyspepsia, neuralgia, fevers and chlorosis. To offer to restore lost vitality to patients suffering with these derangements, is like offering stones for bread, when the bread is as accessible as the stones. This metal is, nine times out of ten, made proper use of in giving strength to agricultural implements and engines of power, but the man who first conceived the idea of giving it as medicine, to give back-bone or spinal power to man, ought to be immortalized among the genii for absurd conceptions. The animal economy is divinely placed two kingdoms above that of mineral, and man, in his subtle nervous organization, crowns the animal kingdom; therefore, everything to be rendered capable of serving this divinest economy, must pass

through the elaboratories of the vegetable kingdom, in order to be recognized among the affinities of this complicated being.

When a mineral is introduced into the human circulation, it finds no kindred element or inviting affinity to welcome or give it a place in the animal economy. It not only becomes an intruder, but blocks up the passages by occupying room needed for those vital elements which perpetuate the chain of life, and requiring, at times, more vital effort to remove it than it can always command, except through the process of breaking down by abscess, to remove the offensive mineral sediment. The damage it does to the nervous system, is to prevent its elemental supply of its fibrous structure; then comes determination to the brain, with obtuse condition of the sensitive nerves, which tolerates the pain of the derangement, rather than relieving the diseased condition.

The solution of ferri absorbs the hematine and holds it in combination, instead of contributing to it, and when it is depurated, it carries with it the best article of nutrition, *hematine;* therefore, it extracts from the system the very agent designed, when given to supply. This is becoming a very popular remedy, by reason of its supposed ability to increase the hematine, or red coloring matter of the blood. The hematine is derived from the combination of the oxygen derived from the inhaled air, with the electric element furnished by the functional nerves of the lungs. In consequence of its remedial action in cases of neuralgia, it has been inferred that the most prominent cause of neuralgic disease was a kind of chlorosis, due to a deficiency of the red globules in the blood. Chemists having discovered iron 2.25-1000 in the blood have vainly supposed that by feeding patients with iron, it would enrich the blood with its hematine. More observing chemists have discovered that the hematosin is the result of the vital chemistry in the air cells, that deposits it upon the periphery of the blood globules, and that the elements contained within the blood globules are free from it; consequently, if this solution of iron should be found to mix with the chyle, and become bottled up in the blood globules, it could not in the least aid this chemical process that occurs exterior to the globules, that takes place in the tissuary vesicles that line the air cells, when in the red pigment or hematosin, is chemically produced by the union of the oxygen with the electric element furnished by the functional nerves of the lungs, and deposited upon the exterior surface of these blood globules.

Chemists have been unable to detect any of the properties of iron in the chyle, when it has not been administered internally. It is only formed in the hematosin deposited upon the external coats of the blood globules; and that in the vital

chemistry of hematosis, three agents are observable as contributing to the production of this hematosin—electricity, oxygen and carbon—the peculiar electric elements needed and furnished by the pulmonary functional nerves; the oxygen from the inhaled air, and the carbon derived from the chyle in the circulation.

Quite a mystery seems to have been thrown around the sources of this iron in the circulation, and pathologists seek to account for disease based upon its variable quantity as the cause of nearly all diseases, and the profession were carried away with the error; and, as general and local blood-letting ranked among the most popular therapeutical agents for febrile, inflammatory and neuralgical diseases, for the space of two hundred years, which the light of science has but recently exploded as a very grave error, so it will be with use of iron as with blood-letting and the use of mercury: it will have its run, until the light of vital chemistry shall prove it to be an offensive agent in the circulation, that will induce vertigo, palpitation of the heart, debility of the reproductive organs, mental incapacity, serving to shorten life by destroying the systemic perpetuating forces. The baneful effects of phlebotomy, mercury and antimony upon humanity, causes it to appear more like troops retiring from battle than any other comparable idea present in my mind; and if millions are not prematurely lost from the ranks of the living by the use of this popular ferriginous remedy, it will come within my fears of its sly, mischievous work, before its coiled up serpent will be publicly detected. But it is to be hoped that the wise will take heed, and escape its baneful effects upon the health and longevity of the race. The only periodic effects observable, resulting from the use of this remedy, are due to its offensive presence in the capillary arteries, that causes what I call a capillary nervous rally, that stimulates more active combustion to dispose of it, at the expense of a waste of nervous energy, the sequence of which is general debility for a greater length of time than if this indication was induced by quinine or salicin, which are good supporters of combustion, neutralizes the malarial poison, and supports the nervous system by aiding assimilation in its fibrous structure, and contributing to the deficient supply of neurine.

ARSENIC.

This deadly poison constitutes one of the popular mineral tonics. The form in which it is used internally is that of Fowler's solution. By reason of arsenic being so deadly a poison

in its concentrated form, will deter the populace from calling for it as a remedial agent. Its action as an anti-periodic is like that of iron, in changing the nervous system to a higher state of action for its removal. The absorbents become so severely taxed in the attempt to clear the system of so offensive an intruder, that causes them to fall into a state of great debility when the reaction takes place. And the sequence of its use as an anti-periodic in intermittent fevers is lassitude, loss of muscular endurance, and dropsy of the cavities and lower extremities, that require the system a great length of time to overcome.

With this exposition of the deleterious effects these mineral therapeutical agents induce upon the vital powers of the physical system, the balance I pass without further remark ; judging that the elucidation of the pernicious action of these are sufficient to exclude all mineral preparations from the materia medica as internal therapeutical agents.

On the other hand, the vegetable remedies readily assimilate into the structure of the system, and fulfill their therapeutical indications in harmony with systemic law, and under their judicious use their sequences are favorable to health and longevity. None of the excruciating pain follows their use, observable to occur from the use of mineral remedies.

ACONITE.

ACONITUM NAPELLUS.

Native of Europe. The Root and Leaves.

This plant is domesticated in the United States, being cultivated in gardens, and bears blue flowers in May and June. It contains an alkaloid, termed aconitina, which is sometimes used externally, in the form of ointment.

Properties.—In over-doses, an acrid poison. In proper doses, it acts as a direct sedative to the nerves of sensation, and is powerfully anti-phlogistic. It should be administered with *extreme caution.* Externally, preparations of the root, which are stronger than those of the leaves, are used to deaden the pain of neuralgia, rheumatism and gout.

Antidotes.—Strong emetics, speedily administered ; after which stimulants, externally and internally.

PREPARATIONS.

Fluid extract aconite leaves. Dose, two to six drops diluted.
" " " root. " one to four " "

LINIMENT OF ACONITE AND CHLOROFORM.

Tincture of aconite root,	one fluid ounce,
Castor oil,	" " "
Chloroform,	" " "
Aqua ammonia, (hartshorn),	" " "
Camphorated tincture of soap, one-half	" "

Mix. To be shaken. Used externally for gout, rheumatism, neuralgia, and pains generally, when the skin is not broken. The remedy is indicated to relieve head-ache, and to abate the frequency of the pulse in febrile action.

ALOES.

ALOE.

Native of South Africa. Juice of the leaves.

The plants which supply the resin of aloes are of various kinds, and yield products bearing different names. They generally send up stalks of from one to three feet in height, bearing respectively white, scarlet, or different colored flowers. The best aloes is made from the dried juice of the cut leaves. Soctorine aloes is considered the finest variety.

PROPERTIES.—Active cathartic, generally used in combination with other purgatives, to modify and decrease its drastic effects. Extensively used in the various pills of the day.

PREPARATIONS.

Fluid extract.	Dose,	ten to twenty drops.
Solid "	"	five to ten grains.

AMERICAN VALERIAN.

CYPRIPEDIUM PUBESCENS.

Common Names: Ladies' Slipper, Nerve Root.

Native of the United States. The Root.

Grows in rich woods and moist lands, blossoming in May and June, having red and yellow blossoms. It is found plentifully in most parts of the United States.

PROPERTIES.—Nervine and anti-spasmodic. Given to quiet the system in nervous irritability. A popular remedy to relieve headache and promote sleep.

PREPARATIONS.

Fluid extract, Dose, one to two teaspoonfuls, diluted.
Solid " " five to ten grains.

COMPOUND MIXTURE OF AMERICAN VALERIAN.

NO. 1.

Fluid ex. American valerian,	one fluid ounce,
" " Virginia snake root,	" " "
" " ipecac,	twenty (20) drops.

Mix. Dose, from a-half to one teaspoonful. Used as an anti-spasmodic, and to increase perspiration.

NO. 2.

Fluid ex. American valerian,	one fluid ounce,
" " hops,	" " "
" " skull cap,	" " "

Mix. Dose, one-half to one teaspoonful. Used as an anti-spasmodic.

ANGELICA.

ANGELICA ATROPURPUREA.

Common Names: Masterwort, High Angelica.

Native of the United States. The Root.

Inhabits fields and moist lands, bearing flowers during the summer months.

Properties.—Aromatic and stimulant. Used in flatulent colic, and is a popular remedy in infusion to promote menstruation.

PREPARATIONS.

Fluid extract. Dose, a-half to one teaspoonful.

INFUSION OF ANGELICA ROOT.

Fluid extract, one fluid ounce,
Hot water, " pint.
Mix. Dose, two to four fluid ounces.

COMPOUND INFUSION OF ANGELICA ROOT.

Fluid extract of angelica root,	one-half of a fluid ounce,
" " gravel plant,	" " " "
Hot water,	one pint.

Mix. Dose, one to two fluid ounces. Repeat as required. Used as a diuretic.

ARBOR VITÆ.

THUJA OCCIDENTALIS.

Common Names: White Cedar, False White Cedar.

Native of North America. The Twigs and Leaves.

This is a well-known evergreen tree much used for hedges and to ornament gardens. It abounds in Canada and the Northern States, growing in rocky places near the borders of streams and ponds. The leaves yield, by distillation, a pungent, essential oil.

PROPERTIES.—Used in rheumatic and scorbutic diseases, in fevers, cough, and as a vermifuge.

PREPARATIONS.

Fluid extract. Dose, ten to twenty drops.

POULTICE OF ARBOR VITÆ.

Fluid extract, two fluid ounces,
Hot water, " " "

Mix. Add of ground slippery elm, linseed, or rye meal sufficient to make of the proper consistence. Used for removing rheumatic pains and swellings.

ARNICA.

ARNICA MONTANA.

Common Names: Leopard's Bane, Mountain Tobacco.

Native of Europe. The Flowers.

Inhabits the cold, northern regions of Europe, flowering in June and July.

PROPERTIES.—Diaphoretic and stimulant. In large doses, poisonous. Seldom used in this country internally, but very generally used externally for the relief of pain, whether resulting from bruises, sprains, or internal inflammation.

ANTIDOTES.—Emetics, followed by vinegar, or other vegetable acids.

PREPARATIONS.

Fluid extract. Dose, ten to thirty drops.
Solid " Not used internally.

TINCTURE OF ARNICA.

Fluid extract. Three fluid ounces.
Dilute alcohol. Thirteen " "
Mix. Used externally.

POULTICE OF ARNICA.

Fluid extract. One fluid ounce.
Vinegar, Three " "

Mix. Add rye or linseed meal to make a proper consistence. Used for bruises, swellings, sprains and rheumatic affections.

ARNICA PLASTER.

Pine resin, one ounce,
Yellow wax, or beeswax, one-half ounce.

Melt together, and add fluid extract of arnica one fluid ounce, stirring until cold. To be spread upon soft leather, cloth, or glazed paper. When spread upon very thin material, it makes a good plaster for corns.

ARNICA OINTMENT.

Solid extract, softened, ʒii,
Lard, one ounce. Mix.

ARNICA COURT PLASTER.

Russian isinglass, half-ounce,
Water, four "

Mix. Dissolve by a gentle heat, and add of fluid extract of arnica ℥ss. Spread the preparation with a soft brush upon silk, stretched upon a suitable frame. From two to four coats will be required, each application being made after the previous one has entirely dried.

GLYCEROLE OF ARNICA.

Fluid extract of arnica, one fluid ounce,
Glycerine, f. ℥ss.

Mix. Used as an application for bites of mosquitos and other insects. The addition of one to three grains of morphia adds to its efficacy for relieving pain, and especially that of the sting of bees.

FOMENTATION OF ARNICA AND WORMWOOD

Fluid extract of arnica, f. ℥ii,
" " wormwood, "
Hot water, a-half pint. Mix.

BALMONY.

CHELONE GLABRA.

Common Names: Turtle Head, Turtle Bloom, Snake Head.

Native of the United States. The Leaves.

Grows in damp soils, and flowers in August and September.

PROPERTIES.—Anthelmintic, mildly laxative, and tonic in small doses. Used as a vermifuge, a tonic for convalescent cases of fever, is one of the best tonics for debilitated nervous systems of weekly females. Very useful in chronic bowel complaints, especially dysentery, and a good appetizer in dyspeptic and consumptive cases. Its best preparation is in an infusion of the fine leaves, one drachm, put in a teacup and filled with boiling hot water; set it aside, and in fifteen minutes strain. To be taken in doses from one to two drachms, every hour.

BARBERY BARK.

BERBERIS VULGARIS.

Native of Northern States. The Bark.

Grows on rocky hills, and in hard, barren, stony localities, bearing small, yellow flowers in May, and ripening its well-known acrid fruit in June and July.

PROPERTIES.—Tonic and laxative, with an after astringent effect. Used in jaundice, dysentery, common and chronic diarrhœa.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.
Infusion, F. ex. ℥ii.
Hot water, one pine. Dose, one to two fluid ounces.

JAUNDICE BITTERS.

Fluid extract barberry bark f. ℥ii, f. ex.
Orange peel f. ℥ii, f. ex.
Prickley ash f. ℥ii.
Dilute alcohol two pints. Sweeten to the taste.
Dose, one wineglassful.

BAYBERRY BARK.

MYRICA CERIFERA.

Common Names: Wax Myrtle, Wax Berry.

PROPERTIES.—Astringent and stimulant. Used in bowel complaints, jaundice; as a gargle for sore mouths, and throat, and as a snuff for catarrh, of the fine ground bark.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonsful.
Infusion fluid ex. one ounce. Warm water, one pint.
Tincture of capsicum, m. 10 to 15. Used as a gargle for sore throat.

BAYBERRY POULTICE.

Fluid extract, one ounce.
Hot water, three fluid ounces.
Mix, and add either ground flax seed, slippery elm, or rye meal, to make of the right consistence. Apply around the throat in scarlet fever, diphtheria, croup, and common sore throat; also, to scrofulous tumors or indolent ulcers.

BELLADONNA.

ATROPA BELLADÓNNA.

Common Name: Deadly Night Shade.

Native of Europe. The Leaves and Root.

Grows in old fields and around old buildings, blossoming in June and July. It is cultivated in this country.

PROPERTIES.—Powerfully narcotic. In over-doses, poisonous; in suitable doses, anodyne and anti-spasmodic, with some diuretic and diaphoretic properties. Used in cases of membranous irritability.

ANTIDOTES.—Strong emetics speedily administered, after which stimulants applied externally and internally. The use of iodine has been recommended.

PREPARATIONS.

Fluid extract,	Dose,	five to eight drops,
Solid "	"	one-fourth to one grain.
Pills, (sugar-coated),	"	" " "

Homœopathic globules, No. 2, five to twenty.

TINCTURE OF BELLADONNA.

Fluid extract, two fluid ounces,
Dilute alcohol, fourteen " "
Mix. Dose, fifteen to thirty drops.

COMPOUND SYRUP OF BELLADONNA.

Fluid extract belladonna,	half a fluid ounce,	
" " elecampane,	one " "	
" " wild cherry bark,	four " "	
Simple syrup,	two pints.	

Mix. Dose, one to two teaspoonfuls.

An excellent remedy for whooping cough and common coughs and colds.

NEURALGIC PILLS OF BELLADONNA.

Extract of belladonna,	twelve grains,
Morphia,	four "
Strychnia,	two "

Mix, and form thirty-two pills.

Used to relieve severe neuralgic and rheumatic pains. Also, in sick head-ache.

Dose, one pill, repeated once in four or five hours until relief is obtained. Should be used with caution.

BELLADONNA OINTMENT.

Soft solid extract belladonna,	one ounce,	
Lard,	eight "	Mix.

LINIMENT OF BELLADONNA.

Fluid extract belladonna,	two fluid drachms,
Aqueous " opium,	one fluid ounce,
Dilute alcohol,	three " "

Mix. Used to relieve nervous pains and pains in the joints.

BELLADONNA POULTICE.

Fluid extract belladonna,	f. ℥i,
Hot water,	f. ℥iv.

Mix, and add ground flax seed, slippery elm or rye meal, to make proper consistence.

Used for inflamed joints.

BITTER ROOT.

APOCYNUM ANDROS-ÆMIFOLIUM.

Common Names: Dogs' Bane, Milk Weed, Wild Buckwheat.

Native of United States. The Root Bark.

Grows in dry soils, by road-sides and borders of woods,

flowering from June to August. The plant exudes a milky juice when cut or bruised.

PROPERTIES.—Tonic, emetic, and laxative.

PREPARATIONS.

Fluid extract, as emetic. Dose, one-half teaspoonful in a cup of warm water, repeated as required.

Fluid extract, as tonic and diaphoretic. Dose, ten to twenty drops.

TINCTURE OF BITTER ROOT.

Fluid extract, f. ℥ii.
Dilute alcohol, f. ℥xiv.
Mix. Dose, one to three drachms.

BITTER SWEET.

SOLANUM DULCAMARA.

Common Names: Woody Night Shade, Violet Bloom, Fever Twig, Scarlet Berry.

Native of United States and Europe. The Root and Twigs.

A woody vine growing around hedges and fences, flowering in June and July. Its red berries hang upon the vine in clusters during autumn and winter.

PROPERTIES.—In large doses, narcotic; but used principally as an alterative. Administered in cutaneous and rheumatic diseases, scrofula, jaundice, and obstructed menstruation.

PREPARATIONS.

Fluid extract. Dose, from one to two teaspoonfuls.
Solid " " two to five grains.

TINCTURE OF BITTER SWEET.

Fluid extract, f. ℥ii,
Dilute alcohol, f. ℥xiv.
Mix. Dose, two to four tablespoonfuls.

INFUSION OF BITTER SWEET.

Fluid extract, f. ℥i,
Hot water, one pint.
Dose, one to two ounces three times per day.

SYRUP OF BITTER SWEET.

Fluid extract, f. ℥iv,
Simple syrup, f. ℥xii.
Mix. Dose, two to four teaspoonfuls three times per day. Used for scrofulous affections.

BITTER SWEET OINTMENT.

Fluid extract, f. ℥iv,
Lard, eight ounces.
Melt the lard, and add the fluid extract, stirring until cold. Used for burns and cutaneous eruptions.

BITTER SWEET—FALSE.

CELASTRUS SCANDENS.

Common Names: Wax-work, Climbing Bitter Sweet, Staff Vine.

Native of America. Bark of the Root.

Grows in woods and thickets, among hedges and rocks, and twining about trees. Flowers in June, bearing a scarlet berry.

PROPERTIES.—Alterative, diaphoretic, slightly diuretic. Used in scrofulous, cutaneous, and hepatic affections.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls

SYRUP.

Fluid extract, f. ℥ii. Simple syrup, f. ℥xiv.
Mix. Dose, one to two tablespoonfuls.

INFUSION.

Fluid extract, f. ℥i,
Hot water, one pint.
Mix. Dose, two to four tablespoonfuls.

BLACK ALDER.

PINOS VERTICILLATUS.

Common Name: Winter Berry.

Native of United States. The Bark.

Common in swamps and by the side of running streams. Flowers in June and July.

PROPERTIES.—Tonic and alterative. Has been used with

success in dropsy, and is recommended in diseases of a typhoid type. Also, used externally for ulcers and eruptions.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Tincture of B. A.—Fluid ex. f. ℥ii. Dilute alcohol f. ℥xiv. Mix. Dose, one to three tablespoonfuls.

Syrup of B. A.—Fluid ex. ℥iv, simple syrup f. ℥xii. Mix. Dose, one to three teaspoonfuls.

Lotion of B. A.—Fluid ex. f. ℥iv, water f. ℥xii. Mix.

Poultice of B. A.—Fluid ex. f. ℥i, hot water f. ℥iii. Mix. Add ground flax seed, slippery elm, rye meal, sufficient to make of proper consistence. Used for gangrenous or ill-conditioned ulcers.

BLACKBERRY ROOT.

RUBUS VILLOSUS.

Native of United States. The Bark of the Root.

A perennial prickly shrub or cane, growing beside fences, around rocks, and in the borders of woods. It flowers in June and July, and its fruit ripens in August.

PROPERTIES.—Astringent and tonic. Used in diarrhœa, dysentery, cholera infantum, and a relaxed state of the bowels in children, to relieve premature bearing down with pregnant females. Also, as an astringent gargle and lotion.

PREPARATIONS.

Fluid extract, Dose, one-half to one teaspoonful.

Solid " " five to eight grains.

Tincture of B. R.—Fluid ex. f. ℥ii, dilute alcohol f. ℥xiv. Mix. Dose, one to three teaspoonfuls.

Infusion of B. R.—Fluid ex. f. ℥i, hot water one pint. Mix. Dose, one to two fluid ounces.

Syrup of B. R.—Fluid ex. f. ℥iv, simple syrup f. ℥xii. Mix. Dose, one-half to one fluid ounce.

Wine of B. R.—Fluid ex. f. ℥iv, sherry or native wine f. ℥xi. Mix. Dose, one-half to one fluid ounce.

Syrup of the fruit of blackberry.—To one pint of ripe blackberries add one pint of dilute alcohol or brandy; let it stand for one week; then express the liquid through a cloth, and add of refined sugar enough to suit the taste. Used for bowel complaints. Dose, for an adult, one-half to one wine glassful two or three times a day; for children in proportion.

BLOOD ROOT.

SANGUINARIA CANADENSIS.

Common Names: Red Puckoon, Indian Paint, Red Root.

Native of United States. The Root.

A small perennial plant, found in rich soil near the borders of woods. Its delicate white flowers are among the first to appear in spring, and the plant continues to bloom until June. The root, when broken or cut, emits an acrid red juice resembling blood, hence the name. Blood root yields a resinoid to to which the name of sanguinarin has been given, and which contains the concentrated properties of the root.

PROPERTIES.—In small doses, stimulant and tonic. In large doses, sedative, reducing the pulse and increasing expectoration. In still larger doses, emetic.

PREPARATIONS.

Fluid extract. Dose, ten to twenty drops.
Solid " " one to two grains.
Sanguinarin, " one-quarter to one grain.

Tincture of B. R.—Fluid ex. f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, as a tonic, stimulant, or expectorant, ten to sixty drops; as an emetic, two to four teaspoonfuls.

Infusion of B. R.—Fluid ex. f. ℥i. Hot water, one pint. Mix. Dose, from one-half to one ounce.

Syrup of B. R.—Fluid ex. f. ℥i, f. ex. of hops, f. ℥i, simple syrup, f. ℥xiv. Used as a tonic, diuretic and expectorant. Dose, one teaspoonful every three hours.

BLUE FLAG.

IRIS VERSICOLOR.

Common Names: Fleur-de-lis, Flag Lily, Liver Lily, Snake Lily.

Native of the United States. The Root.

Grows in moist and wet locations, bearing blue flowers in June and July.

PROPERTIES.—Cathartic, alterative and diuretic. Used extensively in eclectic practice as a substitute for mercury.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.
Solid " " one to four grains.
Iridin, " one to two grains.

Tincture of B. F.—Fluid ex. f. ℥ii. Dilute alcohol f. ℥xiv. Mix. Dose, two to four teaspoonfuls.

Syrup of B. F.—Fluid ex. f. ℥ii, simple syrup f. ℥xiv. Mix. Dose, ʒii to ʒiv.

Powder for Dropsy.—Hydragogue cathartic.—Iridin, three grains, leptandrin, six grains, bi-tartrate of potassa, twenty grains. Mix. For one dose.

BOX WOOD BARK.

CORNUS FLORIDA.

Common Names: Dog Wood, Flowering Cornei.

Native of United States. The Bark.

A small indigenous, found in some of our forests, growing generally from twelve to fifteen feet in height. The flowers are small, of a greenish yellow color, surrounded by large, white involucres, making it during April and May one of the most showy trees in our forests.

PROPERTIES.—Tonic and astringent. Used in eclectic practice as a substitute for cinchona bark in intermittent fevers.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Tincture of Box Wood Bark.—Fluid ex. f. ℥iv, dilute alcohol f. ℥xii. Mix. Dose, two to four teaspoonfuls.

Wine of Box Wood Bark.—Fluid ex. f. ℥iv, sherry or native wine f. ℥xi, alcohol f. ℥i. Mix. Dose, two to four teaspoonfuls.

Infusion of Box Wood Bark—Fluid ex. f. ℥ii, hot water one pint. Mix. Dose, a wine glassful every two hours. Used in intermittent fevers.

BROOM TOP.

CYTISUS SCOPARIUS.

Native of Europe. The Tops.

Broom is cultivated in gardens in this country, bearing large golden colored flowers in May and June.

Properties.—In large doses emetic and cathartic; in smaller doses a valuable diuretic.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Infusion of Broom Top.—Fluid ex. f. ℥i, hot water, one pint. Mix. Dose, one fluid ounce every hour until the desired effect is produced.

BUCHU.

BAROSMA CRENATA.

Native of the Cape of Good Hope. The Leaves.

The different species of this plant possess similar medical

Properties.—It was first introduced into American practice in 1823, and the estimation in which it was held by the Hottentots in diseases of the urinary organs has been verified by trial here. It is now acknowledged as a standard remedy in such diseases. Our fluid extract is made with great care from the long-leaved buchu. It retains the natural oil of the plant, and is a reliable preparation.

BUCK HORN.

OSMUNDA.

Common Names: Buck Horn Brake, Royal Flowering Fern.

Native of the United States. The Root.

A beautiful fern frequenting moist and low lands. It flowers in June. The root, which resembles a deer's horn, yields an abundance of mucilage to boiling water.

Properties.—Used for female weaknesses and in pulmonary complaints.

PREPARATION.

Fluid extract. Dose, one to two teaspoonsful diluted.

BUCK THORN.

RHAMNUS CATHARTICUS.

Native of Europe. The berries.

A shrub growing from five to eight feet high, which is domesticated in this country. It flowers in May or June, and its black shining berries ripen about the first of October.

PROPERTIES.—Hydrogogue cathartic, used in dropsy, for worms, and in the form of syrup, is a favorite domestic cathartic.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonsful.
Syrup of buck thorn, fluid ex. ℥iv., fluid extract allspice ℥i.
Fluid extract ginger f. ℥ii, simple syrup f. ℥xii. Mix.
Dose, one to two fluid ounces.

BUCK THORN BARK.

Rhamnus Catharticus. The Bark.

PROPERTIES.—Cathartic, useful in rheumatism and dropsy.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonsful.
Infusion of buck thorn bark, fluid extract f. ℥i
Hot water, one pint. Mix.
Dose, one to two tablespoonsful.

BUGLE WEED.

LYCOPUS VIRGINICUS.

Common Names: Pauls Betony, Green Archangel, Water Horehound, Sweet Bugle, Mountain Mint.

Native of United States. The Plant.

Grows in shady and moist situations, flowering in August.

PROPERTIES.—It is a diuretic, diaphoretic, emmenagogue, exhilarating as a diffusible stimulant, is one of the smoothest diuretics and best febrifuge we have to use in all febrile conditions. Useful in gravel, dropsies, female weakness, and combined with other medicaments contributes to form one of the most useful remedies to relieve congestion of the synovial membranes between the joints of the spine. By virtue of its affinity for the elements of the nervous system and brain, it facilitates rapid nutrition, relieving congestion and pain. It thereby

becomes a good nervine without being narcotic. Its best preparation is that of infusion made of the leaves and flowers. It can be drank freely without any danger until it fulfills its specific indications.

BURDOCK.

ARCTIUM LAPPA.

Native of Europe and United States. The Root.

This well-known plant grows abundantly in waste places throughout the United States.

PROPERTIES.—Alterative and diuretic, used in scrofulous, rheumatic and venereal diseases.

PREPARATIONS.

Fluid extract. Dose, half to one drachm.

Tincture of B. D., fluid extract f. ℥ii, dilute, alcohol f. ℥xiv. Mix. Dose, half to one fluid ounce.

Infusion of B. D. fluid extract f. ℥i. Hot water, one pint. Mix. Dose, one to four fluid ounces.

Ointment of B. D., fluid extract f. ℥i. Lard, three ounces. Melt the lard and add the fluid extract, stirring until cold. Used for diseases of the skin.

BUTTERNUT.

JUGLANS CINEREA.

Common Names: White Walnut, Oil Nut.

Native of the United States. The Bark of the Root.

An indigenous forest tree, sometimes attaining the height of fifty feet. It flowers in May, and the nuts ripen in September.

PROPERTIES.—A gentle cathartic, operating without producing debilitating effects, and particularly useful in cases of habitual constipation. The resin oil prepared from it, called juglandin, is highly commended by eclectic practitioners as a laxative and cathartic. The preparations of butternut are much used in domestic practice for throat diseases of children.

PREPARATIONS.

Fluid extract. Dose, one to three teaspoonfuls.
Solid " " five to twenty grains.
Juglandin, " one to five grains.

PILLS OF BUTTERNUT.

Solid extract B. N.,	twenty grains.
" " henbane (Hyos),	ten grains.
Podophyllin,	five grains.

Mix together and form ten pills. One to be taken at bed-time for habitual constipation.

SYRUP OF BUTTERNUT.

Fluid extract B. N.,	f. ℥iv.
" " loveage,	f. ℥i.
" " rhubarb,	f. ℥ss.
Simple syrup,	f. ℥x.

Mix. A good laxative for children, in doses of one to two teaspoonfuls. Cathartic in doses of one to four teaspoonfuls.

COMPOUND SYRUP OF BUTTERNUT.

Fluid extract B. N., f. ℥ii.
Aqueous extract of senna, f. ℥i.
Fluid extract of jalap, f. ℥i.
Fluid extract coriander, f. ℥i.
Fluid extract ginger, f. ℥ss.
Simple syrup, f. ℥x.
Mix. To be shaken when used. Dose, one-half to one fluid ounce.

CANABIS INDICA.

FOREIGN INDIAN HEMP.

Native of Asia. The top of the Flowering Plant.

Called by then atives, *ganjah* or *gunjah. Hashish, Churrus. Bhang, subjer.*

Canabis indica is the same plant as canabis sativa of Europe and America, but the latter does not contain the resin which the climate of India gives to the flower. It has been long used in Asia for its strong narcotic and intoxicating properties, and has, within a few years, been introduced into European and American practice. In the resin exists the medical properties of the plant.

PROPERTIES.—Narcotic, exhilarant, sometimes used instead of opium.

PREPARATIONS.

Fluid extract. Dose, five to twenty drops, cautiously increased from five drops. Administered in syrup, milk, or on powdered sugar.

Solid extract. Dose, one-half to one grain.

TINCTURE OF CANABIS INDICA.

Solid extract, twenty-four grains.
Alcohol, one fluid ounce.
Mix. Dose, ten to twenty drops, and repeated as required.

HOMŒOPATHIC PREPARATION.

Unmedicated globules of the sugar of goat's milk, No. 2. Fill a phial with them. Then pour it full of the tincture, let stand one hour, pour off the tincture and spread the globules to dry on a sheet of white paper turned up at the sides, stirring them occasionally to prevent them from adhering together.

Used in febrile attacks of children. Dose, ten to twenty, and repeated every hour until the child rests.

CARAWAY.

CARUM CARUI.

Native of South Europe. The Seeds.

This well-known plant is extensively cultivated in the United States.

PROPERTIES.—A pleasant carminative, indicated in dyspeptic cases, and useful to facilitate digestion.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.
Infusion of caraway. Fluid extract f. ℥i. Hot water, one pint.
Mix. Dose, two to four tablespoonfuls.

CASCARILLA.

CROTON ELEUTERIA.

Native of West Indies and South America. The Bark.

PROPERTIES.—Aromatic, stimulant, tonic and febrifuge, used advantageously with cinchona in intermittents and as an ingredient in tonic bitters.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.
Tincture of cascarilla, fluid extract f. ℥ii. Dilute.
Alcohol f. ℥xiv.
Mix. Dose, one to teaspoonsful.
Infusion. Fluid extract f. ℥i. Hot water, one pint.
Mix. Dose, two to four teaspoonsful.

CATMINT.

NEPETA CATARIA.

Native of Europe. The Tops and Leaves.

This plant, supposed to have been introduced from Europe, grows abundantly in this country, and is easily recognized by its peculiar pleasant taste and odor.

PROPERTIES.—Diaphoretic, carminative. Used extensively in domestic practice for local diseases accompanied with febrile symptoms, in the form of an infusion made from the dried plant.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Infusion, fluid extract, f. ℥i; hot water, one pint. Mix. Dose, one to four fluid ounces.

SEDATIVE MIXTURE.

Fluid extract C. M., f. ℥i.
Fluid extract valerian, f. ℥ss.
Fluid extract scullcap, f. ℥ss. Mix.

Dose, one teaspoonful, repeated as required. Given to allay nervous excitement.

CAYENNE.

CAPSICUM ANUNUM.

Common Names: Cayenne Pepper, Red Pepper.

Native of South America and most hot climates. The Fruit

An annual plant. Although abundantly cultivated in this country, the fruit raised in hot climates is preferred for medicinal purposes.

PROPERTIES.—Stimulant. Used internally to stimulate the digestive organs; used externally as a counter-irritant. In the form of fluid extract, it is vesicatory.

CAYENNE LINIMENT.

Alcohol tincture, f. ℥ss.
Aqueous extract of opium, f. ℥ss.
Oil of origanum, ʒii.
Tincture of camphor, f. ℥xii.
Alcohol, f. ℥xii.
Mix. For rheumatic and neuralgic pains, sprains, &c.

CAYENNE PLASTER.

Melt together four ounces of resin and one ounce of yellow wax. Remove it from the fire, and when nearly cold stir in alcoholic tincture of cayenne, f. ʒii. Camphor in powder, half an ounce. Oil of sassafras, forty-five drops. Mix. To be spread on some proper material.

A good stimulating, strengthening plaster.

CHECKERBERRY.

GAULTHERIA PROCUMBENS.

Common Names: Patridge Berry, Wintergreen, Deer Berry, Mountain Tea.

Native of United States. The Leaves.

PROPERTIES.—Stimulant, tonic, diuretic and astringent. Its essential oil is much used for its stimulating properties, agreeable flavor and taste.

PREPARATIONS.

Oil of checkerberry ʒi, alcohol f. ℥i, forms the tincture. Dose, m. 15, diluted.

Infusion, tincture ʒi, hot water half-pint, sweetened to suit. Dose, two to four ounces.

The oil is used as an external application to the neck and spine, as a stimulant in cases of colds, to relieve the spinal congestion.

CHERRY BARK.

PRUNUS VIRGINIANUS.

Common Name: Wild Cherry.

Native of the United States. The inner Bark.

A handsome forest tree of the Middle States, attaining the height of seventy or eighty feet. It flowers in May, and ripens its fruit in August.

PROPERTIES.—Tonic, and invigorating in its impressions upon the stomach, but sedative to the circulatory and nervous systems. Extensively used as an ingredient in pulmonary mixtures, for which it is well adapted by its sedative qualities and agreeable flavor.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Compound fluid extract. Dose, half to one teaspoonful.

The compound fluid extract is composed of cherry bark, blood root, ipecac and opium. It is extensively used for coughs, colds, and pulmonary complaints in general.

SYRUP OF WILD CHERRY.

Fluid extract, f. ℥iv. Simple syrup, f. ℥xii. Mix. Dose, one to four teaspoonfuls.

Infusion, fluid extract, f. ℥i. Cold water, one pint. Mix. Dose, one to two ounces.

CINCHONA.

CINCHONA.

Common Names: Peruvian Bark, Jesuit's Bark.

Native of South America. The Bark.

Various kinds of barks are known in commerce by the name of cinchona, and the amounts and kinds of alkaloids contained vary with the different species. Quinia and cinchonia are the two most important alkaloids contained in the bark, and the reputation they have attained is equalled by no other isolated principle, unless it be morphia obtained from opium. But the medicinal virtue of cinchona bark does not exist entirely in these two principles; there are others, some capable of isolation and some of a complex nature not yet fully understood. And the fact is well recognized that the bark, or preparations of the bark, which contain all the properties unaltered, often produces the desired effect when quinia or cinchonia fails. Henry Thayer & Co. manufacture three varieties of fluid extracts of cinchona bark, viz: cinchona calisaya, cinchona true red, and cinchona loax. The doses and preparations of each are the same.

PROPERTIES.—Tonic, febrifuge, anti-periodic.

PREPARATIONS.

Fluid extract. Dose, fifteen drops to one teaspoonful.

Compound fluid extract. Dose, fifteen drops to one teaspoonful.

(Formula like tinc. cinchona comp.) Fluid extract aromatic. Dose, one to two teaspoonfuls.

TINCTURE OF CINCHONA.

Fluid extract, f. ℥iii. Dilute alcohol, f. ℥xiii. Mix. Dose, one to four teaspoonfuls.

Infusion of cinchona. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one to two fluid ounces.

WINE OF CINCHONA.

Fluid extract, f. ℥iii. Sherry, or native wine, f. ℥xiii. Mix. Dose, one to two tablespoonfuls.

WINE OF COMP. CINCHONA.

Fluid extract of cinchona comp., f. ℥ii. Sherry, or native wine, f. ℥xiv. Mix. Dose, half a wineglassful three times daily.

ELIXIR OF CALISAYA BARK.

Fluid extract cinchona-calisaya, ʒix.
" " orange peel, ʒii.
" " cardamon, ʒss.
" " cinnamon, ʒii.
Simple syrup, f. ℥v.
Dilute alcohol, f. ℥viii.

Mix the syrup and diluted alcohol together before adding the extracts. Dose, one tablespoonful.

CLEAVERS.

GALIUM APARINE.

Common Names: Goose-grass, Bedstraw, Catchweed.

Native of Europe and United States. The Plant.

An annual weed growing in cultivated fields along the border fences. It flowers in July and August.

PROPERTIES.—Aperient, diuretic. Valuable in diseases of the urinary organs and skin. Used domestically in decoction.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Infusion of cleavers. Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, one to two fluid ounces, repeated to fill the indication.

OINTMENT OF CLEAVERS.

Fluid extract, f. ℥ii. Lard, eight ounces. Melt the lard and add the extract, stirring until cold. Used for scrofulous swellings and cutaneous eruptions.

COHOSH—BLACK.

CIMICIFUGA RACEMOSA.

Common Names: Rattle Root, Squaw Root, Bug's Bane, Black Snakeroot.

Native of United States. The Root.

Found growing in rich soil in upland woods and hill-sides. It flowers from May to August. It contains a peculiar resin called cimicifugin, which is extensively used.

PROPERTIES.—Tonic, nervine and anti-spasmodic. Used successfully in chorea, convulsions, nervous excitability, asthma and other spasmodic diseases, in remittent and intermittent fevers, acute rheumatism, and to accelerate parturitions.

Fluid extract. Dose, half to one teaspoonful.

Solid extract. Dose, four to eight grains.

Compound fluid extract. Dose, half to one teaspoonful.

(Composed of black cohosh, cherry bark, licorice and blood root.)

Cimicifugin. Dose, one to six grains.

This remedy is indicated only after all glandular obstructions are removed.

TINCTURE OF BLACK COHOSH.

Fluid extract, f. ℥iv. Dilute alcohol, f. ℥xii. Mix. Dose, one to two teaspoonfuls.

COLOCYNTH.

CUCUMIS COLOCYNTHIS.

Common Names: Bitter Apple, Bitter Cucumber.

Native of Africa and Asia. The Fruit.

The fruit is about the size of an orange, yellow and smooth when ripe. It contains a yellow medullary pulp, which, when deprived of the seeds, is the part used. This has an intensely bitter taste, and yields its virtues to water and alcohol.

PROPERTIES.—A powerful drastic hydragogue cathartic, producing, when given in over doses, violent griping. It is seldom given alone, but when combined is considered a standard remedy. It stimulates the pancreas to secrete and discharge a greater quantity of its juice, and thereby removes all obstructions of that organ. Its bitter and laxative properties combined serve to assist digestion in chronic dyspeptic cases. It operates as a pepsin in these cases, and no other has filled this

indication as satisfactorily as a formula for indigestion, containing colocynth, long used by the author. Colocynth is one of our quickest cathartics, and is valuable when a speedy and sure action is desired. Its force of action is moderated by combining with it an anodyne, as hyoscyamus or cypripedium.

PREPARATIONS.

Fluid extract. Dose, five to ten drops.

Powder. Dose, five to ten grains.

Pepsin formula. Alcoholic tincture colocynth, ʒii. Alcoholic tincture caraway, ʒii. Alcoholic tincture cypripedium, f. ℥ii. Lime water, f. ℥iv. Mix. Dose, ʒi every hour during the daytime, making twelve doses per day. If it proves too laxative, increase the quantity of all the other ingredients. If not laxative enough, add more tincture of colocynth to the formula.

Pill of colocynth. Colocynth powder, fifty grains. Solid extract of hyoscyamus, ten grains. Make ten pills. Dose, one pill. Used to relieve headache and constipation.

COLUMBO.

COCCULUS PALMATUS.

Native of Eastern Africa. The Root.

Columbo root has been known as a medicine since the year 1677. The root and lateral tubers are cut in slices and dried, in which form it is found in our market. It contains no tannin or gallic acid, which distinguishes it from the American or false columbo (*Frasera Carolinensis*), the latter being blackened by the salts of iron.

PROPERTIES.—Mild tonic and stomachic, without stimulating or astringent properties. One of the most useful vegetable tonics. Used for general debility, dyspepsia, chronic diarrhœa and cholera infantum.

PREPARATIONS.

Fluid extract. Dose, one-fourth to one drachm.

TINCTURE OF COLUMBO.

Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, one to two drachms.

INFUSION OF COLUMBO.

Fluid extract, one fluid ounce. Hot water, one pint. Mix. Dose, one to two fluid ounces.

COMFREY.

SYMPHYTUM OFFICINALE.

Common Names: Gum Plant, Healing Herb.

Native of Europe. The Root.

This plant is naturalized in this country. It is often cultivated in gardens, and grows spontaneously in moist and rich soil, bearing flowers all summer.

PROPERTIES.—Demulcent and slightly astringent and tonic. Used in pulmonary affections, bowel complaints and female debility.

PREPARATIONS.

Fluid extract comfrey. Dose, one to two teaspoonfuls.

Compound wine of comfrey. Fluid extract comfrey, f. ℥i. Fluid extract Solomon's seal, f. ℥i. Fluid extract unicorn root, f. ℥i. Fluid extract chamomile, f. ℥ss. Fluid extract columbo, f. ℥ss. Fluid extract gentian compound, f. ℥ss. Fluid extract cardamon, f. ℥ss. Fluid extract sassafras bark, f. ℥ss. Alcohol, f. ℥iv. Sherry, or native wine, four pints. Mix. Dose, half to two f. ℥. A tonic used in diseases peculiar to females, called "Restorative Wine Bitters."

CRAMP BARK.

VIBURNUM OPULUS.

Common Name: High Cranberry.

Native of United States and Canada. The Bark.

This shrub grows in low, moist lands, attaining the height of ten or twelve feet. It flowers in June, and is then quite ornamental. The fruit resembles the common cranberry, is very acid, and is sometimes used for domestic purposes. It remains on the shrub during the cold months.

PROPERTIES.—Anti-spasmodic, relieving cramps and spasms of all kinds. Is a component of the Mother's Relief. Said to be of great value in puerperal convulsions.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Infusion. Fluid extract C. B., f. ℥ii. Water, one pint. Mix. Dose, one to two fluid ounces, repeated every four hours.

CRANESBILL.

GERANIUM MACULATUM.

Common Names: Wild Cranesbill, Dove's-foot, Crowfoot, Spotted Geranium, Alum Root.

Native of United States. The Root.

Grows in low grounds and open woods, flowering from April till June.

PROPERTIES.—A powerful astringent. Used in dysentery, diarrhœa, cholera infantum, and in excessive mucous discharges of the bowels; also as a gargle for sore mouth, sore throat and relaxation of the uvula; also for prolapsus of the lower bowel. In domestic practice it is used in decoction.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Tincture of cranesbill. Fluid extract, f. ℥ii. Dilute Alcohol, ℥xiv. Mix. Dose, one to four teaspoonfuls.

Infusion of cranesbill. Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, one to two ounces, used as a gargle.

CRAWLEY.

CORALLORHIZA ODONTORHIZA.

Common Names: Dragon's Claw, Coral Root.

Native of the United States. The Root.

This plant is found in woods, growing near the roots of the trees, and is distributed throughout the Northern and Middle States. It has no verdure, but bears flowers from July to October.

PROPERTIES.—Diaphoretic and sedative. Used in low types of fever and inflammatory diseases.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

TINCTURE OF CRAWLEY ROOT.

Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, one to two teaspoonfuls.

INFUSION OF CRAWLEY ROOT.

Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, one to two tablespoonfuls.

SYRUP OF CRAWLEY ROOT.

Fluid extract, f. ℥ii. Simple syrup, f. ℥xiv. Mix. Dose, one to two tablespoonfuls.

CUBEBS.

PIPER CUBEBA.

Native of East Indies. The Fruit.

A perennial climbing plant, growing in forests. The unripe berries are gathered and dried for the market. The taste is pungent and aromatic, leaving a sensation in the throat and fauces somewhat like that which is left by peppermint. The berries are often eaten by speakers and singers to clear the voice, and the power of the oil of cubebs forms the base of most pulmonary lozenges.

PROPERTIES.—Gently stimulant, with a special action on the mucous tissues. Diuretic and expectorant. Used successfully in gonorrhœa, gleet, leucorrhœa, bronchial inflammation, coughs, colds, catarrh, and diseases of the kidneys.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Etherial or alco-resinous extract. Dose, four to twenty drops.

Extract cubebs and copaiva pills, four grains each.

CULVER'S ROOT.

LEPTANDRA VIRGINICA.

Common Names: Culver's Physic, Tall Speedwell, Black Root.

Native of the United States. The Root.

Grows in limestone countries, in rich, moist places. It flowers in July and August. The root contains the resin oil called leptandrin, on which its virtues chiefly depend.

PROPERTIES.—The fresh root is seldom used. The dried root is laxative, cholagogue and tonic, promoting the action of the liver. Used in all functional diseases of the liver, typhoid and bilious fevers, and dyspepsia.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.
Leptandrin. Dose, one-fourth to one grain.
Pills of leptandrin, one grain each.

SYRUP OF CULVER'S ROOT.

Fluid extract C. R., f. ℥ii. Simple syrup, f. ℥xiv. Mix. Dose, one to three teaspoonfuls.

COMPOUND LEPTANDRIN PILLS.

Leptandrin, ʒi. Podophyllin, ʒi. Ex. hyoscyamus, ʒss. Mix. Make sixty pills. Dose for habitual constipation, one; for liver obstruction, two.

DANDELION ROOT.

TARAXACUM DENS LEONIS.

Dandelion grows spontaneously in most parts of the world, and flowers from April to November.

PROPERTIES.—Tonic and laxative, with a tendency to act upon the liver.

PREPARATIONS.

Fluid extract. Dose, one to three teaspoonfuls.

Fluid extract compound. Dose, one to two teaspoonfuls.

Solid extract. Dose, ten to thirty grains.

Fluid extract dandelion and senna. Dose, one to two teaspoonfuls.

COMPOUND SYRUP OF DANDELION.

Fluid extract dandelion, f. ℥ii. Pipsissewa, checkerberry, uva ursi, angelica, each one fluid ounce. Simple syrup, f. ℥viii. Mix. Dose, one to two tablespoonfuls two or three times daily. For kidney complaints, gravel, strangury and inflammation of the bladder.

DRAGON ROOT.

ARUM TRIPHYLLUM.

Common Names: Pepper Turnip, Jack-in-the-pulpit, Wake Robin, Indian Turnip.

Native of the American Continent. The Root.

This plant is found growing in swamps and moist places, flowering in May and June. The fresh root is extremely acrid, causing an intense prickly sensation upon the tongue, lips and fauces, which is relieved by washing the mouth with milk.

PROPERTIES.—The dried root is expectorant, diaphoretic and stimulant. Recommended for cramp, whooping cough, asthma and bronchitis.

PREPARATIONS.

Fluid extract. Dose, ten to fifteen drops.

Syrup of dragon root. Fluid extract, f. ℥ii. Syrup, f. ℥iv. Mix. Dose, half to one teaspoonful. For coughs and colds.

DWARF ELDER.

ARALIA HISPIDA.

Common Names: Wild Elder, Brittle Stem.

Native of United States. The Bark of the Root.

A low shrub, growing in fields and along roadsides. Flowers from June to September.

PROPERTIES.—Diuretic and alterative. Said to be valuable in dropsy, gravel and urinary disorders.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Infusion of dwarf elder. Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, two to four fluid ounces.

ELDER FLOWERS.

SAMBUCUS CANADENSIS.

Common Names: Sweet Elder, Black Elder.

Native of United States. The Flowers.

A well-known shrub, growing in rich grounds in waste places. It flowers in June and July, in white umbel clusters, and bears black berries which ripen in September and October.

PROPERTIES.—Diaphoretic, diuretic and laxative. Used in decoction for constipation with infants.

ELECAMPANE.

INULA HELENIUM.

Native of Europe. The Root.

Elecampane is domesticated in this country. It grows in pastures and along roadsides, flowering in August and September.

PROPERTIES.—Aromatic, stimulant, expectorant, emmenagogue and diaphoretic. Used principally in pulmonary affections.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Infusion. Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, half to one fluid ounce.

Syrup. Fluid extract, f. ℥iv. Simple syrup, f. ℥xii. Mix. Dose, one to two teaspoonfuls.

FEVER BUSH.

BENZOIN ODORIFERUM.

Common Names: Wild Allspice, Benjamin Bush, Spice Bush, Spice Wood.

Native of United States and Canada. The Bark.

This shrub grows from five to eight feet high, and is found in damp woods and shady localities. It flowers in April, and bears bright crimson-colored berries, which ripen in autumn. The fruit is sometimes used in medicine.

PROPERTIES.—Diaphoretic, diuretic, aromatic and anti-periodic. Used as a febrifuge in measles, chicken pox and small pox. Made in a decoction from the bark, and used with saffron.

GOLDEN SEAL.

HYDRASTIS CANADENSIS.

Native of United States and Canada. The Root.

This plant is found in rich, moist soils, in woods and in meadows. In May and June it bears a small white or rose-tinted blossom.

PROPERTIES.—Laxative and a valuable tonic, and extensively used for congestion of mucous membranes.

PREPARATIONS.

Fluid extract. Dose, twenty to thirty drops.

Hydrastin. Dose, one to five grains.

Golden seal bitters. Fluid extract of G. S. and orange peel, *aa* f. ℥ii. Prickly ash, ℥ss. Dilute alcohol, f. ℥xii. Water, f. ℥iv. Sugar, two ounces. Mix. Dose, one-half to one wine-glassful.

GOLD THREAD.

COPTIS TRIFOLIA.

Native of United States. The Root.

This plant grows also in Greenland, Iceland and Siberia. It is found in dark, damp woods and moist meadows. The roots are of a bright golden color, and grow in long, slender fibres, like thread. The taste is intensely bitter.

PROPERTIES.—A pure, bitter tonic, without astringency, re-

sembling in its effects columbo and gentian. The infusion is in general use as a wash or gargle for ulceration of the mouth and fauces.

GRAVEL PLANT.

EPIGEA REPENS.

Common Names: Trailing Arbutus, Winter Pink, Mountain Pink, Ground Laurel.

Native of United States. The Leaves.

A trailing plant, frequenting pine woods and growing around large rocks, where the soil is sandy, throughout the United States. It is one of the first plants to show its flowers in the spring, and they are much prized for their exquisite fragrance.

PROPERTIES.—Diuretic and astringent. It has acquired reputation in gravel and all diseases of the urinary organs. It is considered by many superior to uva ursi or buchu in such diseases.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

INFUSION OF GRAVEL PLANT.

Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one to two fluid ounces.

COMPOUND INFUSION OF GRAVEL PLANT.

Fluid extract gravel plant, f. ℥i. Fluid extract juniper berries, f. ℥ii. Nitrate of potassa, ʒi. Hot water, one pint. Mix. Dose, one to two fluid ounces, as a diuretic. In very painful cases, ten grains of hyoscyamus extract should be added.

GUAIACUM.

GUAIACUM OFFICINALIS.

Native of the West Indies. The Wood and Resin.

This tree grows from twenty to forty feet in height, and is distinguished for its hardness, which fits it for many mechanical purposes. It contains a large amount of resin, to which its medicinal qualities are due.

PROPERTIES.—Stimulant, alterative and cathartic. Used for acute rheumatism, gout and uterine diseases.

PREPARATIONS.

Fluid extract. Dose ten to twenty drops. Given in milk or syrup.

HELLEBORE—WHITE.

VERATRUM ALBUM.

Native of Europe. The Root.

A perennial herb, growing in the mountainous parts of Europe.

Properties.—In large doses a virulent poison. It is one of the best remedies for gout known. Its secret action lies in its ability to restore the lost action of the spinal nervous centres. It is indicated after glandular obstructions are removed. It is indicated for the diseases dependent upon congestion of the brain, cerebellum, oblongata, cervical, cardiac, solar, renal, spermatic and sacral great nervous centres, including insanity, neuralgia, gout, rheumatism, inflamed eyes, nephritis, strangury, cystitis, nocturnal emissions, and pain in the sexual organs.

PREPARATION.

Tincture.—Veratrum, four ounces, in powder. Alcohol, one pint. Mix. Let saturate forty-eight hours, strain off and add enough more alcohol to the dregs to make one pint in both filterings. Used to medicate, Homœopathic globules of the sugar of goat's milk, as follows: No. 1 Globules are recommended for this preparation. Fill a phial of these globules, and then fill it with the tincture to cover the globules. Let them saturate one hour. Pour off the tincture and pour the globules onto a sheet of letter paper to dry, stirring them occasionally to prevent adhering. Dose, from five to twenty globules.

For raving insanity, give twenty globnles every two hours until the patient is quiet.

For gout, give five globules every quarter-hour until relieved of pain.

For rheumatism, give five globules every quarter-hour until relieved of pain.

For neuralgia, give five globules every quarter-hour until relieved of pain.

For painful cerebellum, give five globules every hour until relieved of pain.

For painful cerebrum, give five globules every hour until relieved of pain.

For inflamed or over-sensitive eyes, give five globules every three-quarter hour until relieved.*

*In inflamed eyes, painful to light, begin the treatment at eight, A. M., and continue it to four, A. M.; then cease for four hours; continue this daily until relief is given, which is in about three days. During this time keep the eyelids continually ointed with the white precipitate ointment.

For nephrites, give twelve globules once in twelve hours until relieved of pain.

For strangury, give twenty globules once in five hours until relieved of pain.

For cystitis, give ten globules once in eight hours until relieved of pain.

For nocturnal emissions, give ten globules once in twelve hours until relieved of pain.

For urethral pains, give five globules once in two hours until relieved of pain.

Remembering to keep the liver gently open with one-half grain sugar-coated podophyllin pills, and the kidneys active with the diuretic under Gravel Plant, which see.

HEMLOCK.

ABIES CANADENSIS.

Native of the United States. The Bark, Gum and Leaves.

This is a beaatiful evergreen tree, sometimes attaining more than seventy feet in height. The bark is rich in tannin, and exudes a gum which is much used for strengthening plasters for external application to the spine. The leaves yield an essential oil which is used in liniments for congestion of the spine, and rheumatically enlarged joints. A decoction is made of the leaves, which is diaphoretic, and drank freely for colds.

HENBANE.

HYOSCYAMUS NIGER.

Native of Europe. The Leaves.

Henbane has become naturalized in the United States, and is cultivated for the market. It grows spontaneously about old buildings, beside fences, and in waste places. It blossoms from June to September. The whole plant is medicinal; and the leaves are generally found in the market mixed with the capsules and seeds.

PROPERTIES.—Powerful narcotic. In over-doses poisonous. In medicinal doses, anodyne and anti-spasmodic, allaying pain, and inducing sleep, and therefore rest. It acts like opium without producing constipation.

Antidote.—Strong emetics, stimulants and vegetable acids.

PREPARATIONS.

Fluid extract. Dose, ten to twenty drops.
Solid extract. Dose, one-half to two grains.
Pills, sugar-coated, one grain each.

HOPS.

HUMULUS LUPULUS.

This climbing plant is extensively cultivated in Europe and in the United States. Its cones or strobiles are the part used in medicine, but more extensively used in the manufacture of ale and beer, imparting a bitter and aromatic flavor to the fermenting liquid, and causing fermentation to cease at the proper time. Hops contains a peculiar resinous substance called flower of hops, which is known in medicine as Lupulin. It also contains a volatile oil to which its flavor is due.

PROPERTIES.—Tonic, diuretic, sedative anodyne. Used as a febrifuge to relieve pain and induce sleep.

PREPARATIONS.

Fluid extract. Dose, one-quarter to one teaspoonful.
Solid extract. Dose, five to twenty grains.
Alcoholic tincture. Dose, one-half to one teaspoonful diluted.
Decoction: Hops, a teacupful. Hot water, ℥iv. Dose, ʒii every hour.

HOREHOUND.

MARRUBIUM VULGARE.

Native of Europe. The Plant.

Horehound is naturalized in this country. It grows in fields, waste grounds and by roadsides, flowering in July and August.

PROPERTIES.—Bitter tonic and pectoral. Used mostly as a remedy for coughs and colds.

PREPARATIONS.

Generally used in domestic practice in decoction.
Fluid extract. Dose, half to one teaspoonful.
Tincture. Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, four to six drachms.
Infusion. Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, one tablespoonful.
Syrup. Fluid extract, f. ℥iv. Simple syrup, one pint. Dose, two to four teaspoonfuls. Used for colds and coughs.

HYDRANGEA.

HYDRANGEA ARBORESCENS.

Common Names: Seven Barks, Wild Hydrangea.

Native of the United States. The Root.

This is a beautiful shrub, found on hill-sides and near running streams in the Southern and Middle States. Its flowers are considered a choice addition to bouquets.

PROPERTIES.—Attention has been called to this plant as a remedy for stone in the bladder, especially when employed in the earlier stages of the disease.

PREPARATIONS.

Fluid extract. Dose one to two teaspoonfuls.

Tincture of H. Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, one to two drachms.

Syrup of H. Fluid extract, f. ℥ii. Simple syrup, f. ℥viii. Mix. Dose, two to four drachms.

INDIAN HEMP—BLACK.

APOCYNUM CANNABINUM.

Common Name: Bitter Root.

This plant resembles in its appearance and medicinal properties the apocynum androsemifolium, another species of the same genus. They are both found growing upon light, sandy soil, on the borders of woods, from Maine to Florida. Both exude a milky juice, which becomes solid, like opium, when exposed to the sun and air. They both also yield a resinoid to which the name of apocynin has been given. It is of a dark color, a bitter, nauseous taste, with an odor similar to the root.

PROPERTIES.—Emetic, cathartic, diaphoretic and diuretic. It is much used in dropsy, and also as a diaphoretic in intermittent fevers and pneumonic affections.

PREPARATIONS.

The same as that of apocynum androsemifolium. (See Bitter Root.)

IPECAC

CEPHÆLIS IPECACUHANHA.

Native of South America. The Root.

Ipecac was first introduced into Europe in the year 1672,

being sold in Paris as a secret remedy for dysentery and other bowel complaints. Louis XIV. bestowed upon Dr. John Helvetius public honors and a large sum of money as a reward for making the remedy public. Ipecac is a plant growing in moist places, from one to three feet high. From December to February it bears small white flowers.

PROPERTIES.—Emetic in large doses; in small doses expectorant and diaphoretic, and in minute doses tonic and stimulant, increasing the appetite and promoting digestion. It is peculiarly adapted to expel narcotic poisons from the stomach, and for all cases where an emetic is indicated, as it may be given in almost indefinite doses without injury to the patient.

PREPARATIONS.

Fluid extract (as emetic). Dose, five drops to one teaspoonful.

Fluid extract (as expectorant). Dose, five to ten drops.

Fluid extract ipecac and senna. Dose, four to forty drops.

Tincture of ipecac. Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose as emetic, forty drops to one fluid ounce. Dilute with warm water.

Wine of ipecac. Fluid extract, f. ℥i. Native or sherry wine, f. ℥xiv. Alcohol, f. ℥i. Mix. Dose as emetic, two teaspoonfuls to one fluid ounce. Dose as expectorant, half to one teaspoonful.

Syrup of ipecac. Fluid extract, f. ℥i. Simple syrup, f. ℥xv. Mix. Dose, half to one teaspoonful.

JALAP.

IPOMÆA JALAPA.

Native of Mexico. The Root.

Jalap grows in the vicinity of Xalapa, some six thousand feet above the ocean level. The roots are tubers varying from the size of a walnut to that of an orange. It is brought to market either whole or in slices. Perfect flowers were raised from this plant in 1827, by Dr. Cox, of Philadelphia, when its true character was first known.

PROPERTIES.—A drastic cathartic, operating quickly and sometimes painfully, producing copious watery discharges. Its action is modified by combination with other cathartic remedies.

PREPARATIONS.

Fluid extract jalap. Dose, half to one teaspoonful.
Solid extract jalap. Used in combinations.

TINCTURE OF JALAP AND SENNA.

Fluid extract jalap, f. ℥i. Fluid extract senna, f. ℥iii. Fluid extract cardamon compound, f. ℥ii. Dilute alcohol, one pint. Powdered sugar, two ounces. Mix. Dose for an adult, half to one fluid ounce.

JUNIPER BERRIES.

JUNIPERUS COMMUNIS.

Native of Europe. The Fruit.

The common juniper is a shrub often growing to the height of twelve or fifteen feet, with numerous close branches. It flowers in May, but the berries, the part used medicinally, do not ripen until late in the following year. They have an aromatic odor, a sweetish, terebinthinate taste, and owe their medicinal virtues to a volatile oil. The best are imported from the south of France and Italy. The juniper which grows in the United States is a different species (Juniperus Depussa), and the berries are inferior to the European.

PROPERTIES.—Diuretic and gently stimulant.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

ALCOHOLIC TINCTURE OF JUNIPER.

Oil of juniper berries, f. ℥i. Alcohol, one pint. Mix. Dose, one-half to one teaspoonful, and repeated three or four times per day, diluted in water, syrup or milk.

COMPOUND SPIRITS OF JUNIPER.

Fluid extract juniper, f. ℥ii. Fluid extract lovage, f. ℥i. Holland gin, one pint. Honey, ℥ii. Mix. Successfully used for gravel, in doses of one fluid ounce three or four times daily.

KOUSSO.

BRAYERA ANTHELMINTICA.

Common Names: Cossoo, Kosso.

Native of Abyssinia. The Flowers.

A tree growing about twenty feet high. The flowers which

grow upon the tops of the trees have gained great reputation for the expulsion of the tape-worm.

PROPERTIES.—Purgative and anthelmintic.

PREPARATIONS.

Fluid extract. Dose, two to four teaspoonfuls.

Infusion of kousso. Fluid extract, f. ℥iv. Hot water, one pint. Mix. Dose, two to four tablespoonfuls.

In taking kousso for the expulsion of tape-worm, the stomach and bowels should be first well cleansed by a gentle cathartic, and the medicine taken on an empty stomach in the morning. After its operation a mild cathartic is used.

LICORICE.

GLYCYRRHIZA GLABRA.

Native of Southern Europe. The Root.

This plant is cultivated in different parts of the European continent. A species of licorice is found growing abundantly on the banks of the Mississippi, but is inferior to the foreign.

PROPERTIES.—Demulcent, emollient, well adapted to soothe irritations of the mucous membranes of the bowels and urinary passages. Generally used in combination with other medicines.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls. Used for quinine mixtures. Solid extract, used for combinations.

INFUSION OF LICORICE.

Fluid extract, f. ℥ii. Hot water, one pint. Mix. Dose, one to two fluid ounces. A good demulcent for irritation of the bronchial passages.

LOBELIA.

LOBELIA INFLATA.

Common Name: Wild or Indian Tobacco.

Native of the United States. The Plant and Seeds.

Grows in pastures and on roadsides, flowering from July to November. The upper part of the plant is often in bloom after the seed vessels of the lower part have ripened.

Properties.—Emetic, expectorant and diaphoretic. The author excludes the herb and only uses an alcoholic tincture made from the seeds.

This is one of the most reliable and safe emetics that can be given, and by its alterative and anodyne properties it is precisely indicated in all cases of bilious intermittent and neuralgic fevers, and will leave the system in a better condition than if podophyllin were used to clear the liver, and opium used to allay the nervous irritability. By virtue of its stimulating effects upon the glandular system, it will arouse a sluggish system into a higher state of activity, and expel from the circulation its impurities, very rapidly; thereby it serves to prepare the circulating blood for more active nutrition. By virtue of this action and its expectorant properties, it enters as a prominent article into all our bronchial and consumptive remedies. It is also anti-siphilitic in the chronic stages of that disease. It is a specific in croup by giving the tincture ʒiii, diluted in water ʒiiss. Dose, ʒss every half-hour until the phlegm is loose. At the same time the patient should take one grain of podophyllin, and apply a strong liniment on the back of the neck and trachea.

TINCTURE OF LOBELIA SEED.

Lobelia seed, two and one-half ounces. Pulverize them in an iron mortar. Alcohol, one pint. Let stand four days, filter and add as much more alcohol to the dregs as is lacking of the filtered tincture to make a pint. Dose as an emetic, ʒi diluted in warm water f. ℥iv, and repeat every twenty minutes until it operates.

SWEET FERN.

COMPTONIA ASPLENIFOLIA.

Native of United States. The Leaves.

Found in dry, sandy soils throughout the Northern States, bearing green flowers in May, the leaves appearing afterwards. Its peculiar aromatic fragrance renders it easily recognized.

Properties.—Tonic, astringent and alterative. Recommended for putrid sore throat as a gargle, for rickets, and a drench for the black tongue in stock. Combined with extract of butternut bark, has proved a specific in that disease. Used in decoction in most cases. Fluid extract. Dose, one to two teaspoonfuls, diluted.

SWEET FLAG.

ACORUS CALAMUS.

Native of United States, Europe and Asia. The Root.

Grows in damp places, as meadows and swamps, or by the sides of brooks and streams. Our native plant is considered the best. The roots are gathered in October and November, and dried by moderate heat.

PROPERTIES.—A stimulant carminative. Used generally in combination with remedies of the same class.

Fluid extract. Dose, one-half to one teaspoonful, diluted. Domestically used in decoction made from the root, for colic.

TAG ALDER.

ALNUS RUBRA.

Common Names: Red Alder, Smooth Alder, Common Alder.

Native of United States. The Bark.

Found growing around the margin of swamps and meadows and upon the banks of rivers and brooks. It has numerous barren aments, from two to three inches long, attached to the small branches, like tags, which have given it the name of tag alder. Flowers in March and April.

PROPERTIES.—Emetic, astringent and alterative. Useful in scrofula and secondary syphilis.

Fluid extract. Dose, one to two teaspoonfuls.

Infusion. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, f. ℥i to ℥ii.

TANSY.

TANACETUM VULGARE.

Native of Europe. The Plant.

Tansy has been introduced into this country, and is found growing by the road-sides and in old grounds. It is cultivated in some places for its essential oil, which is extracted by distillation. Its golden-colored flowers appear in August. The whole plant has a strong odor and a bitter taste.

PROPERTIES.—Diuretic, tonic, emmenagogue, and diaphoretic.

PREPARATIONS.

Fluid extract. Dose, twenty drops to one teaspoonful.

Decoction. The herb, a handful ; hot water, one-half pint. Let come to boiling. Dose, one ounce, and repeat every hour.

Used for tardy menstruation, also for weak loins of male or female.

Compound tincture of tansy. Fluid extract tansy, two fluid ounces.

Fluid extract asclepias incarnata, f. ℥i.

Fluid extract unicorn root, f. ℥ss.

Fluid extract prickly ash bark f. ℥ss. Diluted alcohol two pints. Mix. Used as a tonic and a vermifuge. Dose, one teaspoonful three or four times per day.

THIMBLE WEED.

RUDBECKIA LACINIATA.

Common Names : Cone-Disk, Sun-Flower, Tall Cone-Flower.

Native of United States. The Leaves.

This plant grows in damp places, as low thickets, or by the side of ditches.

PROPERTIES.—A valuable tonic and diuretic. Highly recommended in urinary diseases, especially Bright's disease.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

THOROUGHWORT.

EUPATORIUM PERFOLIATUM.

Common Names : Bone-set, Joe-pie.

Native of United States. The Flower-tops and Leaves.

Grows abundantly in low grounds throughout this country. Bears white umbel flowers that appear in August and September.

PROPERTIES.—Tonic, diaphoretic, and in large doses emetic and laxative. A favorite remedy for colds, accompanied with febrile symptoms. A pint bowl filled with the flowers and filled to cover with cold water over night, to drink off during the

next day, and repeated daily, excluding all other drinks, has relieved many cases of dyspepsia that were troubled with irritable lungs and in the first stage of consumptive decline which have come under the author's observation. It proved a success in his own case in early life, after his physician despaired of his recovery; he then, at the suggestion of an aged physician, suspended all other treatment, and followed this course for six months, at which time his health was fully recovered, and has enjoyed fifty years of good health since.

PREPARATIONS.

Syrup of thoroughwort. Fluid extract of thoroughwort, ℥iv. Fluid extract cubebs, f.℥i. Simple syrup, f. ℥vi. Mix. Dose, one to two teaspoonfuls repeated every one or two hours. For coughs or colds. Boneset Candy. Fluid extract boneset f. ℥ii. Molasses one pint. Mix, and boil to a candy. Horehound can be made in the same way. One and one-half pounds of refined sugar may be substituted for the molasses. Boil until one drop solidifies when cooled upon a plate. Then pour the candy into shallow dishes dusted with powdered sugar.

UNICORN ROOT.

ALETRIS FARINOSA.

Common Names: Blazing Star, Star Grass.

Native of United States. The Root.

Unicorn is found from Canada to Louisiana growing in sunny glades on hill-sides bearing a cockade of white flowers about two feet high in June and July.

PROPERTIES.—Tonic, diuretic and vermifuge. Used extensively in diseases of the uterine organs. It is one of the best remedies for chronic, spinal and rheumatic diseases that has been brought into use. It combines with road nettle, and makes one of the best specifics known for chronic spinal derangements, and fulfills every kind of a nervous tonic, and indicated in all chronic diseases of the lungs.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Syrup of unicorn root. Fluid extract, f. ℥ii. Simple syrup, f. ℥xiv. Mix. Dose, one-half to one fluid ounce.

Compound syrup of unicorn and road nettle. Fluid extract of unicorn, f. ℥ii. Fluid extract of road nettle, f. ℥ii. Simple syrup, f. ℥iv. Mix. Dose, one teaspoonful every two to three hours, and even increased to double that quantity of dose if needed to support the system.

UVA URSI.

ARCTOSTAPHYLOS UVA URSI.

Common Names: Mountain Cranberry, Bearberry, Mountain Box.

Native of Northern parts of Europe and America. The Leaves.

A creeping shrubby evergreen, found growing in thick beds, upon dry, sandy ridges, flowering from June to September, and bearing dry, green berries, which ripen during the winter and become red. The leaves contain tonic and gallic acids, resin, and extractive, also a peculiar principle called ursin.

PROPERTIES.—Astringent, tonic and diuretic.

PREPARATIONS.

Fluid extract. Dose, thirty to sixty drops.
Solid extract. Dose, five to fifteen grains.

Compound syrup of urva ursi. Fluid extracts of uva ursi, buchu, cubebs, gravel plant and lovage, *aa* f. ℥i. Dilute alcohol, f. ℥viii. Mix. Dose, two to four teaspoonfuls, repeated every four hours, for strangury or gravel.

WAHOO.

EUONYMUS ATRO-PURPUREUS.

Common Names: Indian Arrow Wood, Spindle Tree, Burning Bush.

Native of United States. The Bark of the Root.

Found growing upon the banks of overflowing streams in clusters from eight to twelve feet high, and bearing a four segmented purple berry that remains on the bush over winter.

PROPERTIES.—In moderate doses it is tonic, alterative, laxative and diuretic. In larger doses it is cathartic and emmenagogue. By virtue of its containing three properties that fill three indications generally present in congestive diseases, it is superior to any one article we know of for bilious diseases. It is also indicated for asthma, bronchitis, cardiac and renal congestion. Generally enters into combination with other medicines. It is contra indicated in cases of female weakness and last stage of pregnancy.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Syrup of wahoo. Fluid extract, f. ℥iv. Simple sprup, f. ℥xii. Mix. Dose, one-half to one fluid ounce. Compound syrup

of wahoo. Fluid extract wahoo, f. ℥ii. Flui extract hops, ℥ii. Fluid extract ladies' slipper, f. ℥ii. Salicin, ʒi, and nitrate of potassa ʒi. Dissolve the two last in warm water, ℥ii. Tincture of wintergreen, ʒii. Simple syrup f. ℥v. Mix. Dose, ʒii four times per day. Indicated in cases of habitual constipation, very common with persons leading a sedentary life. In heart diseases, in systemic decline bordering on consumption, rheumatism, renal obstructions, Bright's disease, and all cases of defective nutrition by reason of impure blood.

WATER ERINGO.

ERYNGIUM AQUATICUM.

Common Names: Button Snake Root, Button Snake Weed.

Native of the United States. The Root.

Frequents swamps and moist lands or springy places. It is a perennial herb, with many white fibrous roots, and warming to the mouth. Stalks three to four feet high bearing blue button flowers that appear in September.

PROPERTIES.—Stimulant and diuretic. It has gained a reputation as a spinal tonic in rheumatic cases.

It is generally used in decoction. Eryngium root, two ounces steeped in one pint of boiling water. Dose, one ounce every hour until the patient begins to feel a little light-headed; then make the time between doses two hours. Used in cases of chronic painful rheumatism.

LOVAGE.

LIGUSTICUM LEVISTICUM.

Native of Europe. The Plant.

This plant has been introduced into the United States, being cultivated in gardens. It has a strong aromatic odor and a pleasant pungent taste, similar to angelica.

PROPERTIES.—Aromatic, carminative and diaphoretic. Often used in combination with other drugs as a corrective, and for its flavor.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.
Domestically used in decoction.

MADDER.

RUBIA TINCTORUM.

Common Name: Dyer's Madder.

Native of Southern Europe and the Levant. The Root.

An herbaceous plant bearing small yellow flowers. It has a long cylindrical root, which is gathered in the third year of its growth, freed from its thin epidermis, and dried for the market.

PROPERTIES.—Emmenagogue and diuretic, and mildly tonic.

PREPARATIONS.

Fluid extract. Dose, fifteen to thirty drops.

MALE FERN.

ASPIDIUM FILIX MAS.

Common Name: High Brake.

The roots are from eight to twelve inches in length, and from one to two inches in diameter, twisted and tuberculous. The leaves start from the rhizoma, and grow from three to four feet high.

PROPERTIES.—Anthelmintic. Has acquired a reputation for expelling the tape-worm.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Infusion of male fern. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one to two ounces for tape-worm, and repeat as advised.

MARSH ROSEMARY.

STATICE CAROLINIANA.

Common Name: Sea Lavender.

Native of United States. The Root.

Marsh rosemary is common in the salt marshes on the Atlantic shores of the United States, bearing flowers from August to October. The root is fusiform, large, fleshy, brownish-red, with a very astringent taste.

PROPERTIES.—Astringent. Has long been used as a domestic remedy for diarrhœa and dysentery; also as a gargle for

sore mouth and throat, and as an injection for diseases of the mucous membranes.

PREPARATIONS.

Fluid extract. Dose, half to one teaspoonful.

Infusion. Fluid extract, f. ℥i. Hot water, f. ℥xii. Mix. Dose, half to f. ℥ii.

Gargle. Fluid extract, f. ℥ii. Water, f. ℥iv. Mix. For sore mouth.

Decoction. Pulverized root, one ounce. Boil fifteen minutes, strain off, and boil down to one ounce. Used with a swab to canker sores in the mouth and throat in cases of diphtheria and putrid throat. In these cases, if it is faithfully applied, will relieve the canker directly without inducing smarting or pain.

MANDRAKE.

PODOPHYLLUM PELTATUM.

Common Names: May Apple, Wild Mandrake.

Native of United States. The Root.

Grows abundantly in woods where the soil is rich. It sends up one round, smooth stem, which divides into two branches, each of which supports a large leaf. Each plant has one solitary white flower on a nodding peduncle inserted in the fork of the two branches, which produces the apple or fruit of the color and shape of a lemon, about two inches long. The rhizoma or root is about half the size of the finger, jointed, giving off numerous fibers at the joints, black externally, yellowish-white internally, with an odor resembling ipecac.

PROPERTIES.—The fresh root is an irritant poison when taken in over-doses, producing griping and bloody discharges. Administered in suitable doses, it is a sure and valuable cathartic, hydragogue, alterant, and in some cases sialagogue. Its medical properties are due principally to the resinoid contained in the root, to which the name of podophyllin has been given, which when properly prepared is a light powder of a bright lemon color.

This remedy is a specific for removing liver obstructions and to induce the secretion of healthy bile. It also increases the action of all the glands and absorbents in the system. It operates thus as a specific for every order of congestion and grade of fever. The administration of a dose of podophyllin should always be preceded by the use of a solution of nitrate of potassa, fifteen to twenty grains, in four ounces cold water.

Dose, ʒiv every half-hour until it is all taken. After two doses of the solution have been taken, the podophyllin may be administered. This precaution should be used before administering any of the biliary cathartics, and is designed to first open the kidneys and stimulate them to depurate from the circulation the impurities that are inducing a suspension of nutrition and consequent fever. Unless this object is first effected, the danger lies in inducing inflammation of the membranes of the intestinal canal by the acridity of these impurities, when the liver is stimulated to do this depurative work and send its secreted impurities through the alimentary canal, to induce a typhoid diarrhœa. By this misjudgment in the treatment of fevers, a simple bilious fever may be augmented into the typhoid type. But by first proceeding to depurate these impurities by the renal passages, the liver is enabled to secrete and send forward pure bile to render the blood sufficiently improved to restore active nutrition, and with it a suspension of febrile action.

PREPARATIONS.

Podophyllin. Dose as a cathartic, one-half to three grains.

Podophyllin. Dose as an alterative, one-eighth to one-half grain.

Sugar-coated pills of podophyllin. One-fourth, one-half and one grain each.

Syrup of podophyllin. Podophyllin, ten grains. Alcohol, ℥ii. Fluid extract of ginger, f. ℥ss. Simple syrup, f. ℥xii. Dissolve the podophyllin in the alcohol, add the ginger, then the syrup, and mix well together. Dose, one to two teaspoonfuls. Used as a laxative.

MOTHERWORT.

LEONURUS CARDIACA.

A foreign plant, naturalized in the United States. The Plant.

It is found growing about old buildings and fences, bearing flowers from June to September. It has a peculiar minty odor, and a bitter, somewhat aromatic taste.

Properties.—Nervine, anti-spasmodic and emmenagogue. It is universally in domestic use, as it can be relied upon to fill these indications. The herb is steeped and used ad libitum until the patient is relieved, there being no danger of an overdose.

MARJORAM.

ORIGANUM VULGARE.

Native of Europe and America. *The Herb.*

A perennial plant found growing from a half to one foot high in limestone regions. The flowers are of a purple-white color, and the plant yields by distillation the volatile oil known as the oil of origanum, on which its virtues depend.

PROPERTIES.—Stimulant, diaphoretic and emmenagogue.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Infusion of marjoram. Fluid extract, ℥i. Hot water, one pint. Dose, one to two fluid ounces as a diaphoretic.

The oil is usually used in combination with other stimulants, as a liniment.

ROAD NETTLE.

URTICA DIOICA.

Common Name: Stinging Nettle.

The Root and Leaves.

It grows by road-sides, waste places, in gardens and woods. Most people have felt its prickly sting. It has a fine aromatic flavor.

PROPERTIES.—It is a good spinal tonic, and indicated in consumption and all chronic diseases of the spine. It is a remedy for diabetes by its healthy action upon the spinal and renal nervous centers. Indicated for tracheitis, bronchitis and asthma.

PREPARATIONS.

Fluid extract. Dose, one-half to one tablespoonful. Used mostly in combination with other remedies.

OPIUM AQUEOUS.

A preparation of opium which produces less cerebral distress and excitement than the alcoholic preparations, with less tendency to produce constipation. Strength the same as that of laudanum.

Antidote for over-dose: First procure the speedy evacuation of the stomach by the use of an active emetic. If the

poison has been taken in the liquid form, use the stomach pump. After the evacuation of the poison, give strong coffee. Stimulants of ammonia in proper doses have been recommended. Above all, keep the patient in constant exercise by every means possible until the sleepy effects of the drug have passed away.

PREPARATIONS.

Aqueous fluid extract. Dose, ten to forty drops.

Deodorized tincture. Dose, ten to forty drops.

Wine of aqueous opium. Fluid extract, f. ℥ii. Sherry or native wine, f. ℥xiii. Alcohol, f. ℥i. Mix. Dose, one to four teaspoonfuls.

ORANGE PEEL.

CITRUS AURANTIUM.

Grows in tropical climes. The Rind of the Fruit.

PROPERTIES.—Aromatic, tonic. Usually combined with tonic bitters, imparting an agreeable flavor.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

PENNYROYAL.

HEDEOMA PULEGIOIDES.

Native of United States. The Plant.

Found growing in old fields and dry pastures, from six to twelve inches high, bearing very small flowers of a light blue color, which perfume the air for some distance. The odor of pennyroyal is said to be particularly disagreeable to insects.

PROPERTIES.—Stimulant, diaphoretic and emmenagogue. It yields by distillation an essential oil of a light yellow color. This oil is usually prepared in an alcoholic tincture of one ounce of the oil to one pint of alcohol. Dose, one drachm of the tincture diluted in four ounces of hot water.

PEPPERMINT.

MENTHA PIPERITA.

Native of Europe and United States. The Herb.

This herb is too well known to need any description. The

essence made from its essential oil has been more generally used than any other as a domestic carminative.

PROPERTIES.—Diffusible stimulant and anti-spasmodic. Used in flatulent colic and to check nausea and vomiting. The inhalation of the gas arising from the warm oil is one of the best that can be used for bronchial inflammation and corizal blennorrhœa arising from a severe cold. A hot infusion is a popular domestic remedy for a severe cold, taken the last thing before going to bed.

Prepared and used the same as pennyroyal.

PIPSISSEWA.

CHIMAPHILA UMBELLATA.

Common Names: Rheumatism Weed, Prince's Pine.

Native of Northern latitudes. The Plant.

This is an evergreen plant, with a perennial creeping root. The leaves are wedge-shaped, of a dark, shining, green color. The flowers are white, tinged with red, and exhale a pleasant odor.

PROPERTIES.—Tonic, diuretic and astringent. Highly recommended in dropsy attended with disordered state of the digestive organs. It is domestically used in decoction, a handful of the plant for a day.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

PLEURISY ROOT.

ASCLEPIAS TUBEROSA.

Common Names: Butterfly Plant, White Root.

Native of United States. The Root.

Found in gravelly soil, more commonly in the Southern States and on the western prairies. This species of asclepias has a long, fleshy, white, tuberous root, and can be recognized in the months of July and August by its clusters of beautiful orange-colored flowers.

PROPERTIES.—Diuretic, diaphoretic and anti-spasmodic, relieving pleuritic congestion by the speedy aid it furnishes nutrition.

PREPARATIONS.

A decoction is made from one to two ounces of the dried root to one-half to one pint of the decoction, and drank as warm as the patient can bear, and repeat the use of it until the patient is relieved. Dose, two ounces every hour. No harm can come of over-dosing, consequently it can be taken at liberty until the patient is relieved.

Fluid extract. Dose, one-half to two teaspoonfuls.

Asclepidin. Dose, one to five grains.

Infusion of pleurisy root. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one to four fluid ounces.

POKE ROOT.

PHYTOLACCA DECANDRA.

Common Names: Garget, Pigeon Berry, Scoke.

Native of United States. The Root.

This plant grows from four to eight feet high, flowering in July and August, and bearing late in autumn clusters of dark, purple berries.

PROPERTIES.—Emetic, cathartic, alterative, and somewhat narcotic. It is a specific for tumid lymphatic and mammary glands. It has acquired a reputation as a remedy in rheumatism, scrofula and chronic syphilis.

PREPARATIONS.

Fluid extract. Dose, ten to thirty drops.

Solid extract. Dose, two to four grains.

Syrup of Poke Root. Fluid extract, f. ℥ii. Simple syrup, f. ℥xiv. Mix. Dose, one to two teaspoonfuls three times daily.

Poultice. Fluid extract, f. ℥ii. Hot water, f. ℥ii. Mix. Add slippery elm, flax seed or rye meal sufficient to make a poultice. Used for caked breasts and lymphatic swellings.

POME-GRANATE.

PUNICA GRANATUM.

Native of Asia. The Rind of the Fruit.

This is a small tree growing in warm climates. It bears dark

scarlet blossoms, in July and August, and yields an agreeable, slightly acid fruit.

PROPERTIES.—Astringent and anthelmintic. Used for tapeworm.

PREPARATIONS.

Fluid extract. Dose, fifteen to thirty drops.

POPLAR BARK.

POPULUS TREMULOIDES.

Common Names: White Poplar, American Poplar, Aspen.

Native of Lower Canada and Northern United States. The Bark.

This tree grows from twenty to fifty feet high, with a diameter from eight to twelve inches. The leaves are agitated by the slightest breeze. The bark contains the two alkaloides, populin and salicin, on which its medicinal properties depend.

PROPERTIES.—Tonic and febrifuge. Used in intermittents.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Infusion. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one-half to two fluid ounces.

PRICKLEY ASH.

XANTHOXYLUM FRAXINEUM.

Native of North America. The Bark and Berries.

Common Names: Suter Berry, Toothache-tree, Yellow-wood.

This shrub grows from eight to twelve feet high, in woods and on the banks of rivers, flowering in April and May, before the leaves appear. The leaves and fruit yield a pungent oil, the odor resembling that of lemon. The bark yields the oleo-resinous principle called xanthoxyllin.

PROPERTIES.—Diuretic, stimulant, tonic and alterative.

PREPARATIONS.

Fluid extract. Dose, ten to thirty drops diluted.

Xanthoxyllin. Dose, two to six grains.

PULSATILLA.

ANEMONE-PULSATILLA ANEMONE-NEMOROSA.

Common in Europe and the United States. The Plant.

These species of anemone are analogous in properties, although anemone-pulsatilla is considered the mo e active. They bear slightly purplish flowers, in April and May.

PROPERTIES.—In over-doses, poisonous but in homœopathic doses it is used for hysteria, painful menstruation and sterility, homœopathic globules No. 2, (20). Dose, ten, three times per day.

QUASSIA.

PICRÆNA EXCELSA, QUASSIA AMARA.

Native of the West India Islands, and Tropical America. The Wood.

A tree which is often found growing in the Island of Jamaica, to the height of one hundred feet.

PROPERTIES.—A purely bitter tonic, which invigorates the system without increasing the action of the heart. It is particularly adapted to that debilitated state of the digestive org ns, which sometimes succeeds acute diseases.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Solid extract. Dose, two to five grains.

The solid extract concentrates a greater amount of tonic power within a given weight than any other known extract of the simple bitters. It is also used in decoction.

RED RASPBERRY.

RUBUS STRIGOSUS.

Native of the United States. The Leaves.

The red raspberry grows wild in the Northern States and Canada. It is found growing by the road-side fences and borders of fields. Several varieties have been produced by cultivation, but the leaves of the wild raspberry are preferred for medicinal use.

Properties.—Astringent and paturient. Used in diarrhœa, dysentery, cholera infantum and bowel complaints, also as a gargle for sore throat. Its pleasant flavor renders it a favorite remedy for small children. It is domestically used in a decoction of the leaves.

PREPARATIONS.

Fluid extract. Dose, thirty to sixty drops diluted.

Wash, for sore mouth or throat. Fluid extract, f. ℥i. Water, f. ℥ii. Honey, f. ℥i. Borax, ʒii. Dissolve the borax in the water and mix.

RHUBARB.

RHEUM.

Native of Asia. The Root.

Rhubarb is known in commerce as of two kinds, viz: India rhubarb and Turkey rhubarb, the latter commanding a much higher price than the former, and considered of much superior quality.

Properties.—Cathartic, tonic, astringent and mildly diuretic. Its astringency is exerted after its cathartic effect is produced, thus making it a very valuable remedy in bowel complaints. Its tonic power also makes it a valuable remedy for habitual constipation and dyspepsia.

PREPARATIONS.

Fluid extract India rhubarb. Dose, one-half to two teaspoonfuls.

Solid extract India rhubarb. Dose, two to ten grains.

Powder. Dose, one-fourth to one teaspoonful.

Tincture of rhubarb compound. Fluid extract rhubarb, f. ℥i. Fluid extract licorice, f. ℥ii. Fluid extract ginger, ʒiss. Fluid extract saffron, ʒiss. Dilute alcohol, f. ℥xii. Mix. Dose, one-half to one fluid ounce.

RUE.

RUTA GRAVEOLENS.

Native of Southern Europe. The Leaves.

Rue is an evergreen, shrubby plant, which has been for a long time cultivated in our gardens as a medicinal herb. It flowers in July and August. It should be gathered when the seed vessels are well developed, but before they are ripe. The

whole plant has an unpleasant smell and an exceedingly bitter and acrid taste, due to the volatile oil which is the active medicinal part of the plant.

PROPERTIES.—A powerful emmenagogue in large doses. In suitable doses used in amenorrhœa and as a vermifuge.

PREPARATIONS.

Fluid extract. Dose, ten to thirty drops.

Tincture. Fluid extract, f. ℥ii. Dilute alcohol, f. ℥xiv. Mix. Dose, ʒiii.

Compound mixture of rue. Fluid extract rue, f. ℥i. Fluid extract squill, ℥ss. Alcoholic tincture of tolu, ʒiv. Simple syrup, f. ℥iiiss. Mix. Dose, one to two teaspoonfuls, morning, noon and night. Used in amenorrhœa and for a vermifuge. It also improves the appetite.

Rue plaster. Take finely pulverized rue and mix it with any soft ointment. Spread a plaster three inches in diameter, and apply it to the pit of the stomach of a child troubled with worms, and let it remain until the worms pass, which will generally take three or four days. It will improve digestion if the case does not prove to be that of worms.

SAFFRON.

CROCUS SATIVUS.

Native of Asia Minor. Cultivated in Europe and America. The Flowers.

Saffron is cultivated in our gardens, and flowers in autumn. The flowers are gathered in the morning, just before they open, and are carefully dried. They have an aromatic odor, and color the saliva deep yellow when chewed, leaving a pleasant, aromatic, bitter taste in the mouth.

PROPERTIES.—Diaphoretic. Long used for the red gum of infants, and to keep up a continued diaphoresis in cases of measles and small pox. It is most commonly used in decoction. ℞ Saffron flowers ʒss. Boiling water, three-fourths of a teacupful. Dose for an infant, ʒss every hour.

SHOP PREPARATIONS.

Fluid extract. Dose, ten to thirty drops.

Syrup of saffron. Fluid extract, f. ℥ii. Simple syrup, f. ℥xiv. Dose, one to two teaspoonfuls. A popular remedy in the first teething in children. Given in larger doses to adults.

SAGE.

SALVIA OFFICINALIS.

Native of Southern Europe. The Leaves.

Sage is a perennial plant cultivated in our gardens. The flowers are blue, and appear in June and July, when the tops should be cut from the stems and carefully dried for use.

PROPERTIES.—Diuretic, diaphoretic, and a diffusible stimulant. Much used in the form of "hot sage tea" to induce perspiration.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls, diluted.

Infusion of sage. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one to four fluid ounces, repeated as required.

SARSAPARILLA.

SMILAX OFFICINALIS.

Native of South America. The Root.

PROPERTIES.—Sarsaparilla is considered by many authors a valuable alterative. Used in eruptive and scrofulous diseases.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Solid extract. Dose, five to fifteen grains.

Fluid extract of sarsaparilla and dandelion. Dose, one-half to one teaspoonful.

Its greatest virtue consists in its power as an alterative in cases of secondary syphilis, and as an antidote for over-administration of mercury.

SARSAPARILLA—AMERICAN.

ARALIA NUDICAULIS.

Used for the same purposes as the foreign, smilax officinalis.

SASSAFRAS BARK.

LAURUS SASSAFRAS.

Native of North America. The Bark of the Root.

A tree growing from ten to thirty feet high in woods, flowering in May and June. The flowers, leaves and twigs are fragrant, and impart a peculiar aromatic, agreeable taste. The bark of the root contains the larger proportion of the essential oil, on which the medicinal properties chiefly depend.

PROPERTIES.—Aromatic, stimulant and diaphoretic. Used generally in combination with other medicines. The oil is a very active stimulant, and enters into combination with many of the liniments.

Fluid extract. Dose, fifteen to thirty drops, diluted.

SKULL-CAP.

SCUTELLARIA LATERIFLORA.

Common Names: Blue Skull-cap, Side Flowering Skull-cap, Mad Weed, Hoodwort.

Native of United States. The Plant.

Grows by the side of ditches, ponds and in damp places, bearing small blue flowers in July and August.

PROPERTIES.—Nervine and anti-spasmodic. Often used in combination with valerian and hops.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Fluid extract compound. Dose, one-half to one teaspoonful.

Infusion of skull-cap. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one wineglassful two or three times per day.

SEA-WRACK.

FUCUS VESICULOSUS.

Common Names: Bladder Weed, Rock Weed, Twin Bladder, Shore Weed.

Native of the Eastern Coast of North America. The Plant.

This sea-weed grows upon the shore, clinging to rocks, from

Canada to the Gulf of Mexico. It contains iodine, and when burned yields kelp.

PROPERTIES.—Sea-wrack has lately attained a reputation for reducing obesity; also used for dyspepsia and as an alterative tonic.

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Syrup of sea-wrack. Fluid extract, f. ℥ii. Simple syrup, one pint. Dose, two to four tablespoonfuls.

SENEKA.

POLYGALA SENEGA.

Common Name: Senaca Snake-Root.

Native of United States. The Root.

Found in various parts of the United States, but more abundant in the Southern and Western portion. It flowers in July. The root is crooked, wrinkled and marked with transverse figures. Its taste is like checkerberry, while it pricks the tonsillary glands like lobelia.

PROPERTIES.—In large doses, emetic; in small doses, expectorant, diuretic and diaphoretic. Much used in diseases of the bronchial passages, pneumonia, humoral asthma and incipient croup.

PREPARATIONS.

Fluid extract. Dose, ten to twenty drops.

Infusion. Fluid extract, ℥i. Hot water, one pint. Mix. Dose, one-half to f.℥i.

Syrup of Seneka. Fluid extract, ℥iv. Simple syrup, ℥xii. Mix. Dose, one-half to one drachm.

Expectorant mixture. Fluid extract of seneka, f. ℥iv. Fluid extract of ipecac, ʒss. Paregoric, ʒiii. Syrup of balsam, tolu, f. ℥iv. Mix. Dose for an adult, ʒi; for children, ten to twenty drops repeated as required.

SENNA.

CASSIA ACUTIFOLIO.

Native of Southern Asia. The Leaves.

Several species of the plant called cassia, are known by the name of senna, as cassia acutifoli), cassia obovata, cassia

elongata, and cassia lanceolata—all distinguished by the shape of their leaves. In commerce they are distinguished by the name of the port or country from which they are exported, as, Alexandria or Egyptian, Tripoli or Fezzan, Mecca or Arabian, and Bombay or India. The senna from Alexandria is considered the best, with the exception of a new species lately introduced from Madras, called "Tinnevelly," from the name of the province in Hindostan, where it was first raised from seed procured near the Red Sea. Senna was first introduced as a medicine by the Arabians, as early as the ninth century.

PROPERTIES.—A prompt, efficient and safe cathartic. It acts principally upon the small intestines. It is apt to cause griping pains, which are modified by combining with it some corrective, as dandelion, hops, valerian, or hyoscyamus, or by combining it with a diffusible stimulant, as peppermint.

PREPARATIONS.

Fluid extract. Dose, one to four teaspoonfuls.

Fluid extract of senna and dandelion. Dose, one to three teaspoonfuls.

Fluid extract of senna and jalap. Dose, one to two teaspoonfuls.

SKUNK CABBAGE.

SIMARUBRA OFFICINALIS.

Common Name: Meadow Cabbage.

Native of United States. The Root.

PROPERTIES.—Stimulant, anti-spasmodic and expectorant. It occasions nausea and vomiting, in large doses; but in suitable doses it has been successfully used in whooping cough, asthma, hysteria and chronic rheumatism.

PREPARATIONS.

Fluid extract. Dose, ten to sixty drops.

Syrup. Fluid extract, f. ℥ii. Simple syrup, f. ℥viii. Mix. Dose, ʒii to ʒiii.

SNAKE ROOT.

ARISTOLOCHIA SERPENTARIA.

Common Name: Virginia Snake Root.

Native of the United States. The Root.

A perennial plant, growing abundantly near the Alleghany mountains, bearing brownish-purple flowers in May or June.

The root has a strong, aromatic smell, and a warm, somewhat bitter, camphorous taste.

PROPERTIES.—Stimulant, tonic and diaphoretic. Useful in typhoid fevers, and when combined with cinchona bark, has proved serviceable in intermittents.

PREPARATIONS.

Fluid extract. Dose, fifteen to thirty drops.

Tincture. Fluid extract, f. ℥ii. Dilute Alcohol, f. ℥xiv. Mix. Dose, one to two teaspoonfuls.

Infusion. Fluid extract, f. ℥i. Hot water, one pint. Mix. Dose, one-half to one fluid ounce.

Compound tincture of snake root. Sudorific mixture. Fluid extract snake root, f. ℥i. Fluid extract ipecac, f. ℥i. Fluid extract saffron, f. ℥i. Aqueous extract opium, f. ℥i. Tincture of camphor, f. ℥ii. Dilute alcohol. three pints. Mix.

A powerful sudorific. Useful in cases where a copious perspiration is required, or when it is desirable to allay nervous excitability, lessen pain and produce sleep. Dose, one teaspoonful given in warm herb tea every hour until perspiration is produced. In other cases the dose may be from ten to sixty drops, according to the age and condition of the patient.

SPEARMINT.

MENTHA VIRIDIS.

Native of Europe. Naturalized in the United States. The Herb.

Cultivated in many places for the oil which it yields by distillation. It also grows spontaneously in pastures, and by the side of small mountain streams. Its pale purple flowers appear in July and August.

PROPERTIES.—Stimulant, anti-spasmodic and carminative.

PREPARATIONS.

Fluid extract. Dose, one to three teaspoonfuls.

Infusion of spearmint. Fluid extract f. ℥ii. Hot water, one pint. Mix. Dose, two to four fluid ounces, as a febrifuge.

SPIKENARD.

ARALIA RACEMOSA.

Native of the United States. The Root.

Grows in rich woodlands. It has a small, branching stem, three to four feet high. The root is large, fleshy, branching, with a strong aromatic odor. The flowers appear in July.

PROPERTIES.—Aromatic and alterative. Used in pulmonary diseases.

PREPARATIONS.

Fluid extract. Dose, one to teaspoonfuls.

Compound syrup of spikenard. Fluid extract spikenard, yellow dock, burdock, *aa* f. ℥v. Fluid extract sassafras, prickly ash, elder flowers, blue flag, tincture gum guaiacum, *aa* f. ℥iv. Dilute alcohol, two pints. Simple syrup, one and one-half gallons. Mix the fluid extracts with the syrup; the tincture of guaiacum with the diluted alcohol, and then mix all together. This is an excellent alterative syrup. Nitrate or iodide of potassium may be added, if desirable, and flavor to suit the taste.

SQUAW VINE.

MITCHELLA REPENS.

Common Names: Winter Clover, Patridge Berry.

Native of United States. The Whole Plant.

A small evergreen, trailing plant, which bears scarlet. edible berries remaining during the winter, and affording food to birds and small animals during that season. Grows in woods around the roots of trees.

PROPERTIES.—Diuretic, astringent and tonic. It has gained a reputation as a remedy in female weakness, and enters into the formula of "Mother's Relief."

PREPARATIONS.

Fluid extract. Dose, one to two teaspoonfuls.

Mother's Relief. Fluid extract squaw vine, f. ℥ii. Fluid extract cramp bark, cypripedium, queen of the meadow and rhubarb, *aa* f. ℥i. Fluid extract unicorn, f. ℥ss. Simple syrup, f. ℥xviii. Mix and flavor to please the taste of the patient. Used by females to support them through the time of their pregnancy. It is an excellent remedy for hysteria and female weakness in general. Dose, one teaspoonful repeated for four doses per day.

WORM SEED.

CHENOPODIUM ANTHALMINTICUM.

Common Name: Jerusalem Oak.

Native of United States. The Seeds.

Grows in waste places and about old buildings. The plant has a strong unpleasant odor, which is due to the essential oil contained more abundantly in the seeds.

PROPERTIES.—Anthalmintic and anti-spasmodic.

PREPARATIONS.

Fluid extract. Dose, twenty to sixty drops. Oil of worm seed. Dose, one-fourth to one-half drachm. Taken in sweetened water to expel worms.

YELLOW DOCK.

RUMES CRISPUS.

Common Names: Narrow Dock, Curled Dock.

Native of Europe. Naturalized in this country The Root.

This plant is distributed throughout the United States. There are several species of dock. This may be known by its long narrow lanceolate leaves, crisped at the edges, and its long yellow spindle-shaped root.

PROPERTIES.—A valuable alterative, possessing in the concentrated form of fluid extract, more remedial power than has usually been ascribed to it. In the class of diseases to which sarsaparilla is applicable, yellow dock will be found a valuable remedy.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Solid extract. Dose, four to eight grains.

Ointment of yellow dock. Fluid extract, f. ℥ii. Lard, three ounces. Yellow wax, one ounce. Melt the lard and wax together, add the extract and stir until cold. Used for diseases of the skin.

YELLOW JESSAMINE.

GELSEMINUM SEMPERVIRENS.

Common Names: Wild Jessamine, Woodbine.

Native of the Southern States. The Root.

A climbing plant, extensively cultivated for its luxuriant foliage, beautiful flowers, agreeable shade and perfume.

PROPERTIES.—Has acquired a great reputation as a febrifuge, being said to subdue the most formidable and complicated fevers incident to our country and climate, as well as the more simple and mild. It is also said to possess control of the nervous system, removing nervous irritability more completely than any other known agent. It should never be used except by direction of a physician.

PREPARATIONS.

Fluid extract. Dose, five to thirty drops.

Tincture of yellow Jessamine. Fluid extract, two fluid ounces. Dilute alcohol, f. ℥xiv. Mix. Dose, one-half to one teaspoonful, repeated according to the nature of the disease. Used externally for rheumatism or neuralgic pains.

YELLOW PARILLA.

MENISPERMUM CANADENSE.

Common Names: Moon-seed, Vine Maple.

Native of United States. The Root.

This plant is plentiful in the States and Canada, growing in woods and near streams. Its root has sometimes been mistaken for sarsaparilla.

PROPERTIES.—Tonic, laxative and alterative. It is a very good addition to laxative bitters.

PREPARATIONS.

Fluid extract. Dose, one-fourth to one teaspoonful.

Infusion of yellow parilla. Fluid extract, one fluid ounce. Hot water, one pint. Mix. Dose, two to four tablespoonfuls.

WHITE WILLOW.

SALIX ALBA.

Native of Europe and America. The Bark.

A well-known tree growing from twenty to fifty feet high, flowering from March to June. The bark is intensely bitter, and from which the well-known tonic called salicin is extracted, and used in all cases in the place of quinine—two and one-half grains of salicin equaling one grain of quinine. Salicin is the preferable remedy by reason of its solvency in water. There is no danger of its being precipitated by any of the fluids in the system, serving in fevers to restore nutrition by enriching the blood.

PROPERTIES.—A reliable tonic and anti-periodic, and gently diuretic, by acting as a solvent of albuminous concretions in the ducts of the kidneys.

PREPARATIONS.

Salicin. Dose, three to ten grains, and repeated every two to three hours. Indicated as an anti-periodic, and

a specific for intermittent fevers. It is a cooling tonic that will not determine to the head, or increase the frequency of the pulse. It has also gained a reputation as a remedy in rheumatism and gout. Its best action is manifest when administeted directly after removing glandular obstructions.

QUEEN OF THE MEADOW.

EUPATORIUM PURPURIUM.

The Root.

Grows in spongy meadows five or six feet high, bearing purple umbel clusters of flowers in August and September.

PROPERTIES.—Diuretic, tonic, somewhat stimulant and astri gent. It has acquired a reputation for gravel, strangury, and all chronic diseases of the urinary organs.

PREPARATIONS.

Fluid extract. Dose, one-half to one teaspoonful.

Diuretic compound. Fluid extract of queen of the meadow. Trailing arbutus, Marsh mallows, dwarf elder, *aa* f. ℥ss. Water, one pint. Holland gin, one pint. Sweeten with honey to suit the taste. Used in disorders of the urinary organs. Dose, wine-glassful three times per day.

SPONGE.

This article is a specific for the enlargement of the thyroid gland, called goiter, and for all the lymphatic glands. It is prepared by charring coarse, cheap sponge on an iron plate under an iron mortar. A tincture is made of this coal.

Tinctu e of sponge coal. ʒi. Alcohol, f. ℥i, or enough to make an ounce when filtered. Dose, two to five drops diluted every three hours.

CAMPHOR GUM

Is prepared in tincture, five ounces of the gum to one pint of alcohol. Camphor is a good diffusible stimulant, and is particularly indicated in cases of diarrhœa and dysentery in children. It is also a good diaphoretic, and indicated in high congestive fevers, such as diptheria and scarlatina. It is valuable for convalescent cases of pneumonia, and enters into our

diaphoretic powders. Dose of the tincture, one to five drops diluted. The tincture is an excellent external application to the neck and spine when congested from taking a severe cold.

SWEET SPIRITS OF NITER

Is a stimulating diuretic, and is indicated when a diuretic is needed, and the patient much debilitated. Dose, one-fourth to one drachm diluted, and repeated two hours apart. It will dissolve quinine, and enters into our anti-periodic tonic.

Sweet spirits of niter, f. ℥ii. Quinine, twenty grains. Dose, ʒiss diluted, repeated every two to two and one-half hours. Used as an anti-periodic in ague and fever.

NITRATE OF POTASSA.

This is a cooling diuretic, and one of the best in fevers, cystitis and strangury. It is a solvent of concrete albumen that is ever present obstructing the excretory ducts of the kidneys in cases of congestive fevers. It is a solvent of the albuminous concretions that obstruct the capillary bile-ducts in the liver. It overcomes the lithic habit, by first clearing the renal ducts, and secondly supports the organs in their depurative work. It thus aids in restoring the blood to its normal quality for nutrition. Used from ten to twenty grains in solution of cold water from four to eight ounces. Dose, ʒiv every hour until it is all taken. Such a diuretic solution should precede the administration of any biliary cathartic.

OIL OF SWEET ALMONDS

Is used to soothe and protect the membranes of ducts from irritating poisonous elements in the circulation. It also operates as a soothing diuretic to protect the ureters, bladder and urethra in diseases of the lithic habit.

Olive oil is used for the same indications for which the almond oil is used, but the preference is given to the oil of sweet almonds.

NUNQUAH.

Common Name : Swamp Snake Root.

Native of United States. The Plant and Root.

Grows in rich bottom lands in shady woods from four to six inches high, has green, colt's foot-shaped leaves, with fine serrated edges. The whole plant and root has a strong camphorous, snake root, agreeable flavor.

PROPERTIES.—It acts as a specific for spinal diseases. It has gained a reputation as a remedy in female weaknesses, as leucorrhœa, prolapsus, retension of the menses. It is used beneficially in gout and rheumatism, and all organic diseases dependent upon chronic spinal congestion at their nervous centres, consequently, useful in heart and lung diseases.

PREPARATION.

A fluid extract is made from one ounce of alcoholic tincture from one ounce of the herb. Dose, ʒi, diluted, each four hours. In all diseases where it is indicated, the dose is about the same.

PULMONARY BALSAM.

℞ Tincture of Lobelia seed, f. ℥i.
" " Blood root. f. ℥i.
" " Tolu, f. ℥i.
" " Anise, f. ʒii.
" " Opii, f. ʒii.
Simple syrup, O. iii. Mix, and shake well.

Dose, from ʒss, to ʒi. This formula can be relied on as an efficient expectorant to relieve coughs arising from colds, whooping cough, bronchitis, laryngitis, pneumonia. It is a preventative for croup, useful in asthma, and dropsy of the chest, arising from pericarditis. The author has used it for thirty-five years. There is no danger of a child taking one-half f. ʒ every fifteen minutes until an irritating croup is quieted, then given a dose as often as the cough inclines to return.

BALSAMIC DIURETIC.

℞ Sweet spirits of niter, f. ℥ii.
Balsam of copaiva, f. ℥i
Oil of sweet almonds, f. ℥i.
Oil of juniper berries, ʒi.
T. Opium, ʒiss.
Podophyllin, grs. ii.

First cut the podophyllin in the sweet spirits of niter, then

cut the oil of juniper, next the oil of capaiva, and shake well; then add the oil of sweet almonds and T. of opii and shake well. Add simple syrup, O. ii. This preparation should be well shaken before pouring out to fill a phial or to take a dose, as it inclines to separate by standing. Dose, ʒi, to be taken without further dilution. Used for diabetis, chronic inflammation of the kidneys, cystitis and gonorrhœa, also in chronic rheumatism.

DIURETIC,

℞ Extract hyoscyamus, grs. x.
Nitrate of potassa, grs. xx.
T. Wintergreen, ʒi.
Hot water, ℥i.
Simple syrup, ℥i.

Dissolve the extract and nitrate of potassa in the water, then add the simple syrup and wintergreen tincture, and add tincture bloodroot, ʒss. Used for cystitis, uterine, and all neuralgic cases. Dose, ʒi, every thirty minutes, diluted in cold water, ℥ss.

DIURETIC.

To clear the ducts of the kidneys and to aid in depurating the circulation of impurities, prior to giving a dose of podophyllin to open the liver:

℞ Nitrate of potassa, grs. xv.
Cold water, ℥iv.
T. Wintergreen, m. x.

Use ℥ss every half-hour until it is all taken. After taking two doses, give from two to three one-half grain sugar-coated podophyllin pills, according with the age of the patient. If it be a child that cannot take pills, give it in the powder in milk. Used in all febrile attacks to overcome the congestive symptoms.

DIAPHORETIC POWDERS.

℞ Pulverized opium, ʒi.
Pulverized Ipecac, ʒii.
Camphor gum, ʒiv.
Bi-carbonate of soda, ℥ii.

First put the camphor gum into a mortar and pour two-thirds

drachm of alcohol on the camphor gum to cut it enough to make it pulverizable. Rub it until it is a fine powder. Pulverize the soda separately. Mix first the opium and the ipecac thoroughly, then add it to the camphor and stir it well, then add lastly the bi-carbonate of soda and rub it until it is thoroughly mixed and will show no white specks of soda unmixed. Dose, from two to five grains. Used in all febrile and painful diseases, to relieve pain and induce perspiration. It is the best fever powder in use, and also the best expectorant used in the form of powder.

CHOLERA SPECIFIC.

℞ Tincture of prickly ash, bark of the root, or of the berries, f. ℥iv.
T. of capsicum, f. ℥ij.
T. of gum myrrh f. ℥j.
T. of camphor, ʒj.
Oil peppermint, ʒss.
T. of opium, ʒij. Mix all together.

This formula can be relied upon for prompt relief in cholera, cholera morbus, cholera infantum, chronic diarrhœa, and for dysentery. For Asiatic cholera, or cholera morbus, use one-third drachm in one-fourth tumbler of sweetened cold water, for a dose. Use such a dose every fifteen minutes until the vomiting and purging ceases, and the veins fill full at the hands. An enema made with one-half drachm of it in four drachms of water, used up the bowels, will prevent or stop the cramp in fifteen minutes, and warm the extremities. For cholera infantum, use one-fourth drachm. Sweetened cold water, ℥iij. Give ʒi every fifteen minutes. Also use an enema of the drops, one-eighth drachm in water ʒiv. Use such an enema twice per day until the symptoms subside. For severe diarrhœa, use a cholera dose every fluid passage of the bowels. For dysentery, use the following enema every time the painful tenesmus or bearing-down pain recurs: Cholera specific, one-half drachm. T. opium, one-half drachm. Olive oil, ʒi. Water, ʒiv. Also use for a dose, one-fourth drachm in cold sweetened water ℥ij, at every passage of the bowels.

CHOLERA INFANTUM POWDERS.

Made directly after the formula of the diaphoretic powders, with the exception of the omission of the ipecac, and an addi-

tional quantity of bi-carbonate of soda to ℥iv. Then the dose will be safely used to nearly double that of the diaphoretic powders. Used for teething and chronic acid diarrhœas of children. Dose, three grains in milk, and repeated as often as the bowels move. By the use of the recommended enema in such cases, the patient will recover very much more rapidly.

CHOLERA MIXTURE.

Tincture of cayenne, tincture of rhubarb, tincture of camphor, tincture of opium, tincture of spearmint, *aa* f. ℥iss. Mix. Dose, thirty drops in a little water every hour until the disease is checked.

HAMLIN'S CHOLERA MIXTURE—No. 1.

Tincture of rhubarb, f. ℥i. Tincture of opium, f. ℥ss. Spirits of camphor. Mix. Dose, ten to twenty drops diluted, and repeated until the disease is checked.

No. 2.—Tinctures of opium, capsicum, ginger, cardamon compound, *aa* ℥ss. Mix. Dose as above.

FOR DIARRHŒA.

Fluid extract rhubarb, tincture of opium, spirits camphor, essence of spearmint, *aa* ℥ss. Simple elixir, ℥i. Mix. Dose, one-half to one teaspoonful, and repeated every fluid passage of the bowels.

ANODYNE.

Fluid extract valerian, fluid extract of cayenne, *aa* ℥i. Aqueous fluid extract opium, ℥ss. Spirits camphor, ʒii. Mix. Dose, fifteen to thirty drops, diluted. For colic cramp and severe pains.

DIURETIC.

Fluid extract uva ursi, ℥ii. Fluid extract squills, ʒi. Fluid extract digitalis, ʒss. Nitrate potassa, ʒi. Simple elixir, ℥ii. Mix. Dose, one-half to one teaspoonful.

DIURETIC.

Fluid extract pareira brava, ℥ii. Nitrate potassa, ʒi. Simple elixir, ℥ii. Mix. Dose one-half to one teaspoonful.

FOR COUGH WITH HOARSENESS AND SORENESS OF THE LUNGS.

Fluid extract cubebs, ʒi. Fluid extract of ipecac, ʒss. Fluid extract cherry bark, ʒss. Simple syrup, ℥iss. Mix. Dose, one-half to one teaspoonful. To be shaken when used.

FOR COUGH.

Fluid extract bloodroot, ʒss. Fluid extract squills, ʒss. Fluid extract ipecac, ʒss. Aqueous extract of opium, gtt. xx. Simple elixir, ℥viii. Mix. Dose, one to two teaspoonfuls.

COUGH CANDY.

To ten pounds of melted sugar add the following mixture, and divide into sticks: Fluid extract of squills, Fluid aqueous extract of opium, *aa* ʒi. T. of tolu, ℥ss. Fluid extract of ipecac, ʒii. Oil of checkerberry, gtt. xiii. Oil sassafras, gtt. vi. Oil anise, gtt. iii. Mix.

SUDORIFIC, OR FEVER DROPS.

Fluid extract of crawley, pleurisy root, skunk cabbage, *aa* ℥ss. Simple elixir, ℥viii. Mix. Dose, one-half to one teaspoonful with hot balm or sage tea.

LINIMENT FOR BURNS AND SCALDS.

Linseed oil, unboiled, ℥i. Lime water, ℥iv. Mix. Apply to the burn freely with a feather, then cover with cotton-batting. Renew the application every six hours.

LINIMENT.

FOR SPRAINS, BRUISES, PAINS AND ACHES.

Saltpetre, (nitrate potassa,) ℥i. Beef's gall, fresh, ℥iv. Fluid extract of opium, ℥ss. Spirits camphor, ℥iv. Aqua ammonia, ℥i. Oil lavender, ℥ss. Alcohol, ℥vi. Mix.

FOR CHILBLAINS.

Tannin, ʒiss. Fluid extract of arnica, ʒii. Glycerine, ʒvi. Mix.

SPINAL LINIMENT.

Oil of hemlock boughs, ℥ii. Oil of sassafras, ʒii. T. of capsicum, ℥ii. Spirits of camphor, ℥ii. Laudanum, ʒiv. Oil lavender, ʒii. Spirits of turpentine, ʒiii. Mix.

GUTTA PERCHA PLASTER.

Chloroform, ʒiii. Gutta percha, ʒi. Mix and dissolve. A coating for sore nipples, chapped or cracked hands or skin.

FOR TOOTHACHE.

Chloroform, ʒvi. Fluid extract of aconite, ʒss. Alcohol, ʒiv. Morphine, grains, iv. Mix. Moisten with the solution cotton enough to fill the cavity of the tooth.

TANNIN TOOTHACHE DROPS.

Tannin, ʒi. Chloroform, ℥i. Mix. Use as above.

DISINFECTANT.

Pure ground coffee, burned upon a hot shovel is an effectual and agreeable disinfectant of a sick room.

PERFUMES.

LILY OF THE VALLEY.

Otto of rose, gtt. xx. Oil of neroli, gtt. xv. Oil bergamot, ʒii. Honey, ʒi. T. of musk, ʒi. Essence of orris root, O. i. Mix and filter.

JOCKEY CLUB.

Essence tube rose, essence magnolia, essence jassmine, *aa* ℥i. Otto of rose, ʒss. Oil of bergamot, T. of musk, *aa* ℥i. Alcohol, deodorized, one quart. Mix and filter.

WHITE PERCIPITATE OINTMENT.

White percipitate, two ounces. Lard, one pint. Mix. For Winter use. For Summer use, take equal parts of mutton tallow and lard and melt them together, and when sufficiently cool stir in the percipitate, which should be rubbed fine before putting it in. This can be scented with any perfume desirable. The lard should be sweet, neither burned nor rancid.

DIETETIC.

In treating diseases, we find much to encounter from nurses who know so little about the laws of dietetics as to be constantly impeding the progress of the recovery of the patient by the improper use of some injurious article of diet. Unless we provide against this difficulty by giving a consistent system of diet for the invalid, physicians cannot expect to be freed from the continuation of this embarrassment. In supporting nature while it is striving to regain its lost balances, the timely administration of consistent articles of diet is indispensable.

Much judgment is required to determine the quality admissable, and the quantity demanded in very low cases. The diet should be regularly administered in such cases, every three hours. The quantity should be determined by the attending physician, who best comprehends the nature of the case. For a general idea touching this point, the patient will require very little nourishment while the system is laboring under a state of high febrile excitement in acute diseases. After the subsidence of the fever, the quantity should be such as to carefully improve the appetite rather than to diminish it by giving too

much at a time. The diet must not be of any solid substance while the digestive apparatus is thus enfeebled. It should be prepared in the form of broth or gruel until the patient is convalescent, when a more solid diet should be very carefully approached; otherwise, a fatal relapse may be the consequence.

ARTICLES OF DIET ALLOWABLE WHILE UNDER TREATMENT FOR CHRONIC DISEASES.

WATER.—Pure cold water should have the preference to all other drinks. There is no disease where its free use in moderate quantities is not allowable.

GRUELS.—Made of oat meal, wheat flour, farina, rice flour, corn meal, corn starch, pearl barley, tapioca and arrow-root.

SOUP OR BROTH.—Made from beef, mutton or chicken, to which may be added rice or barley or any other farinaceous article ; also vegetable soup.

MEATS.—Beef, mutton, chickens, pigeons, turkeys, all kinds of tongue, venison and game of all kinds in its season.

FISH.—Cod, rock-fish, perch, flounders, haddock, pike, trout, mackerel and herring. Salt fish should be well soaked in cold water before it is used. Oysters roasted in the shell, made into soup or raw, are not only nutritious but of easy digestion.

VEGETABLES.—Potatoes, beets, green peas, all kinds of beans, when young and tender, carrots, turnips, spinach, cauliflower, cabbage, and in some cases, asparagus. All kinds of vegetables ought to be well cooked ; potatoes are best when roasted.

PUDDINGS.—Made of arow root, rice, sago, tapioca, Indian meal, corn starch, farina, oat meal, barley flour, &c. Puddings should not be made too rich. Eggs, milk and sugar should be used sparingly.

BREAD AND CAKES.—All kinds of light bread not recently baked, biscuits, sample cakes.

EGGS.—Lightly dressed, either boiled, poached, or made up into custards.

FRUITS.—Baked, stewed, or preserved sub-acid apples or pears, whortleberries, blue-berries, peaches, oranges, plums,

apricots, watermelons, muskmelons, &c. Also, some kinds of dried fruit, as dates, prunes, figs, or in fact any fruit not of too acid a quality. No fruit whatever, except perhaps peaches and blackberries, should be used in cases of bowel complaints.

MILK.—Milk, either raw or boiled may be used, providing it agrees. The same may also be said of fresh buttermilk.

The above list is given to convey an approximate idea of what is wholesome and will not disagree, under ordinary circumstances with an invalid, provided it is taken in proper quantities and at regular intervals. Still, all such regulations are subject to considerable modification, for as it is frequently said, "What is one's meat is another's poison," so individual peculiarities must be studied and consulted. Whatever is known or found upon trial to disagree, should be scrupulously avoided.

Regularity in the hours of meals should be observed. Too long fasting as well as too frequent eating is to be deprecated.

ARTICLES FORBIDDEN UNLESS SPECIALLY ALLOWED BY THE ATTENDING PHYSICIAN.

BEVERAGES.—All kinds of liquors, coffee, green tea, and all acidulated drinks. (See "Diet during nursing.")

MEATS.—Pork, veal, sausage, kidneys, geese, ducks, mince-pies, and every kind of salted or fat meat.

SOUPS.—All high-seasoned soups, such as turtle, mock-turtle, &c.

FISH.—Crabs, lobsters, clams, and all kinds of fish not mentioned in "Articles allowed."

VEGETABLES.—Cucumbers, onions, radishes, parsnips, garlic, all kinds of pepper, pickles and salads of every description.

Pastry of every description, whether boiled, baked, or fried.

Spices and artificial sauces of every kind. All condiments, as catsup, vinegar or mustard.

Rancid cheese and butter.

All kinds of nuts and fruits not mentioned among the "Articles allowed."

ARTICLES OF DIET CONSISTENT IN ACUTE DISEASES.

GRUEL.—Thin corn meal gruel is an excellent diet drink in many diseases, but especially in small-pox and the eruptive fevers, and in acute diseases of the respiratory apparatus. Put a pint of water on the fire, slightly seasoned with salt, and when boiling briskly, sprinkle in two tablespoonfuls of corn meal, stirring it continuously until done, usually about five minutes. It is best when warm, and should be made frequently. Oat meal gruel may be made in the same manner and used in similar cases.

TOAST AND WATER.—Cut a large slice of wheat bread, toast it evenly and nicely brown, and put it in a covered earthenware vessel and cover with boiling water. It will be ready for use in half an hour, and forms a very light and acceptable drink in acute diseases.

BARLEY WATER.—Wash clean two ounces of pearl barley; put it in a vessel with a quart of water, and boil slowly to one pint. It may be seasoned to suit the fancy of the patient, with lemon-peel, catawba wine and sugar, spices, &c.

GUM-ARABIC WATER.—To an ounce of gum-arabic, add a pint of boiling water and stir until dissolved. In many cases it is permissible to render it slightly acid with lemon, and to sweeten with loaf sugar. It is an excellent drink in acute diseases when the soothing influence of a demulcent is desired.

FARINA GRUEL.—Heat a sufficient quantity of water, and when boiling sprinkle in a sufficient quantity of farina to give it the desired consistence. Sweeten it with loaf sugar, and if desirable, add a small portion of brandy, rye whiskey, or wine. It is an excellent light diet in acute diseases, and in the diseases of children.

TAPIOCA.—Take three heaping tablespoonfuls of tapioca and wash it well in cold water. Drain it and pour on sufficient water to cover it, and let it soak for four hours. Now add as much more water and boil it until it looks quite clear, and flavor it to suit the taste of the patient, always having reference to the character of the disease. Sago may be prepared in the same way.

SAGO, MAZINA, OR TAPIOCA PUDDING.—Add three tablespoonfuls of sago, mazina, or tapioca to a pint of milk, and boil it until quite soft adding gradually three ounces of white

sugar. Now set it aside to cool, and having beat up three eggs, stir them by degrees into it. Flavor with nutmeg and bake in a deep dish.

EGG AND MILK.—Take a fresh egg and boil one minute; break it into a tumbler and add half a teacupful of hot milk, and stir briskly until they are thoroughly mixed. Seasoned with salt this forms a most excellent, light and easily digested food in many forms of disease, but especially during convalescence.

EGG WINE.—Break a fresh egg into a tumbler and beat it until smooth and thick. Now add a teaspoonful of sugar and ʒii of Maderia wine, and one or two ounces of boiling water. This forms an excellent stimulant and restorative in cases where wine is indicated, and where this can be digested.

BRANDY AND EGG.—Take a fresh egg, break it in a shallow dish, and beat it until smooth and thick. Now add a tablespoonful of brandy, and four tablespoonsful of boiling water, and mix thoroughly. This forms one of the most valuable preparations that can be used, in cases of great prostration, as it furnishes a concentrated article of food in a pleasant form, and at the same time the necessary stimulant. Give one-half at a time.

BRAN GRUEL.—Take of new wheat bran one pint. Add six pints of boiling water, boil to four pints. Strain and add sugar, syrup, honey, or aromatics to render it agreeable to the taste. It is demulcent and nutritious, easy of digestion, and useful in colds and febrile and inflammatory affections.

MALT GRUEL.—Take ground malt, one pint. Boiling water, three pints. Infuse the malt in the water for two hours. Strain and sweeten adding aromatics if desired. It is valuable in fevers and inflammations as a diluent, and is a mild, unirritating and nutritious article.

RICE GRUEL.—Take of ground rice half a teacupful, add water, two pints. Boil for one hour, strain, and add nutmeg, cinnamon, or wine and sugar to suit the taste. This forms an excellent diet drink in acute diseases, and in cases of great exhaustion when stronger food cannot be taken.

PANADA.—Take two or three slices of dry wheat bread, toast it slightly and crumb it into a bowl. Season it with nutmeg, cinnamon, or other spice to suit the taste, and pour on it a pint of boiling water, and if not objectionable, a tablespoonful of best brandy or whiskey. It forms an excellent and pleasant diet for the weak and prostrate patient, and digests easily and quickly.

Flour Gruel.—Make a linen or muslin bag holding a pound of flour, fill it with wheat flour and boil for several hours or until it forms a hard mass. Of this, two or three tablespoonfuls may be grated into half a pint of new milk and the same of water, or into water alone if the milk is objectionable, and let it boil for a few minutes. It may be seasoned with any spice, and forms an excellent substitute for arrowroot, tapioca, or sago. It is a good diet in bowel complaints of children, chronic dysentery and diarrhœa, and in many weakened and irritated states of the stomach and bowels.

Beef Tea.—Take of lean beef, freed from fat, a pound. Put it in a vessel over a slow fire and pour in it two pints of boiling water. Let it boil for half an hour, removing any scum that arises, add the necessary salt and pepper, and strain off the liquor before it gets cold.

Another.—Take a nice beef-steak cut thin, half a pound. Put it on the gridiron over coals, and broil until each side is slightly roasted. Now place it in a tin vessel and pour on it half a pint of boiling water. Cover it and let it stand where it will keep warm for half an hour.

I prefer the latter method of making beef tea, but either will give an excellent preparation, highly nutritious and easy of digestion.

Beef Essence.—Take of lean beef, without fat, cut it in small pieces, and put it in a stout glass bottle. Suspend it in a vessel of water and boil it four hours. Then strain off the liquor and season with salt. This furnishes the largest amount of nourishment in the smallest compass, and is employed in low forms of fever and other diseases attended with great prostration.

Mutton Broth.—Take two pounds of neck of mutton, cut it in pieces and cover it in the vessel with three pints of water. Boil it four hours. Strain off the liquor and season to the taste. It is an excellent preparation for the sick, especially in diseases of the bowels.

Chicken Broth.—Take of the dark meat of a chicken, the wings, legs, thighs and neck, pour on them a pint of water, and boil gently for thirty minutes, seasoning with salt only. This broth is more stimulating than any of the others and should not be given when any febrile symptoms are present.

Oyster Soup.—Take half a dozen oysters, cut out the gristle, and put them in a stew-pan with a teacupful of equal parts of milk and water. Boil for five minutes and strain off the liquor, seasoning with salt, and pepper if admissible.

FLUID EXTRACT.

Fluid extracts of botanic remedies secure a uniformity of their strength and preservation. They are easy of transportation and always ready for use. They have come so generally into use that every druggist keeps them. The rule apopted in their preparation is to make one fluid ounce of the extract from one ounce of the raw material. By observing this rule in domestic practice, a decoction can be made from any dried herb or plant, and by referring to the number of doses in each fluid ounce, determine how many doses their decoction contains by observing the weight of the raw material before steeping it.

We offer these fluid extracts for family use as medicines, ready for use, that can be relied upon for uniformity of strength, and that will not suffer any loss by age.

DILUTE ALCOHOL.

Dilute alcohol signifies fifty per cent., or proof spirits. To reduce commercial, or eighty-five per cent. alcohol to that of proof, or fifty per cent. *Rule.*—To ten parts of alcohol add seven parts of water. Let it stand in a covered vessel in a cool place for half an hour or more before using.

SIMPLE SYRUP.

Simple syrup is made by dissolving one and one-half pounds of refined sugar by a gentle heat, until it boils, in one pint of water.

In making tinctures, infusions and syrups according to the formulas in the preceeding pages, the use of Thayer's fluid extracts will ensure a reliable product.

Drowning, Suffocation, Poisoning, &c.

TREATMENT OF THE APPARENTLY DROWNED.

Water extinguishes life as it does fire, simply by *keeping off the air;* therefore, restoring air to the lungs by inflation, is most to be depended on, and should be commenced the moment the body is out of the water, and continued perseveringly as long as it *retains any warmth*, and *while the limbs are flexible.* Let the water drain from the mouth, remove mucus, then press back the larynx, close both nostrils, and blow forcibly your own breath into the lungs, through the corner of a handkerchief, which you have laid over the mouth. As soon as you can procure bellows, close the mouth and one nostril, and blow through the other, still pressing back the windpipe.

Having distended the lungs fully, press on the chest so as to empty the lungs: do this alternately, imitating natural respiration. Remove the neckcloth, *cut off* the wet clothes, rub the body dry, apply *dry* heat in every possible way, as soon as you can get the body into a house, carrying it on a hurdle or plank, with the head raised. If the glottis be spasmodically closed, you must use the tracheal tube to inflate with; and if oxygen gas could be obtained it would be more efficient. Stimulants may be got into the stomach by means of the flexible tube, till the person can swallow; and clysters of mustard with salt or brandy and water may be thrown up. Bleeding *cautiously* may relieve the congestion on the right side of the heart. Electricity may be tried, passing *gentle* shocks through the heart, the body being insulated by placing it on a shutter, supported by quart bottles perfectly *dry* on the outside. Tracheotomy may be performed if other means fail in distending the lungs.

TREATMENT OF PERSONS SUFFOCATED

BY CARBONIC ACID GAS; HYDROGEN OR NITROGEN GAS; EXHALATIONS FROM DEPOSITORIES OF SOIL, ETC.

If the body retains its heat, expose it to the air, and dash cold water over the head, neck, and breast. The lungs should

be inflated, the nostrils stimulated, and if the veins of the neck appear full, some blood may be removed from them. If the temperature of the body be below the natural standard, heat must be applied instead of cold.

Friction may be useful.

TREATMENT OF PERSONS STRUCK BY LIGHTNING.

Inflate the lungs as early as possible; apply stimulants, more particularly *gentle* electrical shocks, passed through the chest, and along the spine; keep up the temperature by external heat, and get warm cordials into the stomach by means of the flexible tube and syringe.

TREATMENT OF PERSONS HANGED.

Remove the ligature as soon as possible, and act as for a drowned person with the exception of opening the jugular vein, and removing, if possible, six or eight ounces of blood. Death is caused rather by suffocation than by apoplexy, therefore, the lungs should be supplied with air without delay.

TREATMENT OF PERSONS WHO HAVE BEEN EXPOSED TO INTENSE COLD.

First use gentle friction with snow or iced water; or, if these are not to be had, the cold bath may be used; and whilst the person remains in it, small quantities of hot water must be added at intervals, so as to raise the heat very gradually. The lungs to be inflated. Warm wine, or any other warm fluid to be given, very cautiously at first, and solid food shouid be withheld for some hours after recovery.

ANTIDOTES FOR POISONS.

GENERAL DIRECTIONS.

Proceed immediately to evacuate the stomach. Give large doses of warm water, and as fast as vomited give more. While

the patient is drinking the water, speedily prepare an emetic, thus: one heaping teaspoonful of ground mustard; one heaping teaspoonful of fine salt; one coffee-cupful of *tepid* water. Stir it up, and administer it. This is a speedy and handy emetic. As quick as the stomach is thoroughly evacuated, give strong coffee or the whites of two or three eggs, whichever can be most speedily procured.

GENERAL ANTIDOTES FOR ACID POISONS.

Drinks of alkalies, as chalk, magnesia, whiting and water, or soap and water, always remembering the rules given above.

FOR ALKALINE POISONS.

SUCH AS POTASH, SODA, AMMONIA, ETC.

Vinegar and water, lemon juice, sour beer or cider, or sour fruit followed by olive, linseed, or any wholesome oil.

SPECIAL DIRECTIONS FOR THE MOST COMMON POISONS.

FOR ARSENIC, OR ITS PREPARATIONS.

Empty the stomach by the pump, or emetic of salt and mustard. Give large draughts of *new milk* and egg, lime water and flour, or linseed tea to inviscate the arsenic. A full dose of linseed oil should be given, and the diet should be farinaceous.

ANTIMONY OR ITS PREPARATIONS.

Excite vomiting by tickling the throat with a feather, or the finger, and large draughts of mild fluids; or *allay* vomiting by opium, according to the previous effects of the poison. The best antidotes are decoctions of astringent vegetables, as oak, cinchona, gall nuts, or strong tea.

COPPER AND ITS PREPARATIONS.

Encourage vomiting. Large draughts of milk and water, whites of eggs stirred up with water and taken freely. Inflammatory and nervous symptons to be subdued on general principles.

SILVER, NITRATE OF.

A tablespoonful of common salt dissolved in a pint of water, and a wine-glassful to be taken every two or three minutes, after which, mucilaginous drink and purgatives.

LEAD AND ITS PREPARATIONS.

Alum, or sulphate of magnesia, or sulphate of soda. Castor oil, with or without opium, assisted by frequent emollient clysters and the warm bath.

ZINC AND ITS PREPARATIONS.

Assist vomiting by large draughts of warm water. Particular symptoms to be met by appropriate remedies. Milk and albumen may be drank freely.

MERCURY AND ITS PREPARATIONS.

Whites of eggs mixed with water, and one to be given every two or three minutes to procure vomiting and decompose the poison. Milk in large quantities, gum water, linseed tea, and wheat flour and water. Inflammatory consequences should be anticipated, and cared for by usual remedies. The moist persulphuret of iron is an antidote.

MINERAL ACIDS.

SULPHURIC, NITRIC, MURIATIC.

Mix an ounce of calcined magnesia with a quart of water, and give a glassful every two minutes. Soap, or chalk and water may be used until the magnesia is procured. Vomiting should be excited by tickling the throat. Diluents may be taken until the poison is got rid of, but the return to solid food must be very gradual. Inflammatory and other consequences to be treated by the usual remedies.

OXALIC ACID.

Emetics. Chalk or magnesia made into cream with water. Lime water and oil may be given. During recovery, warmth, stimulants, rhubarb and magnesia.

NARCOTICS.

OPIUM, MORPHIA, BELLADONNA, ATROPIA, HENBANE, STRAMONIUM. CONIUM.

The stomach to be effectually evacuated, by pump or an emetic of lobelia or ipecac, and repeating it every quartei of an hour till the full effect is produced. These means may be assisted by tickling the throat with a feather, or the finger. Large and strong clysters of soap dissolved in water, or salt and gruel, should be speedily administered, to clear the bowels and assist in getting rid of the poison, and active purgatives may be given after the vomiting has ceased. When as much as possible of the poison has been expelled, the patient may drink strong, hot infusion of coffee. If the drowsiness, which is sometimes extreme, and the insensibility, bordering on apoplexy, be not remedied by these means and by the tepid bath, blood may be taken from the jugular vein, blisters may be applied to the neck and legs, *and the attention roused by every means possible.* During the opium stupor keep the patient walking up and down between two assistants. If the heat declines, warmth and friction must be perseveringly used. It is desirable that but little fluid of any kind should be given, as it promotes the diffusion and absorption of the poison, for which no special antidote is at present known.

ANIMAL POISONS.

POISONOUS FISH, STALE FISH, MUSSELS, ETC.

Emetics. Large draughts of warm water. After full vomiting, active purgatives. Give vinegar and water, and sponge the body with the same. The after treatment must be according to the symptoms.

VENOMOUS INSECTS.

SPIDER, SCORPION, HORNET, WASP, BEE, GNAT, GAD FLY.

Hartshorn, or hartshorn and oil applied to the part, or a rag moistened with the same, or salt and water, until the pain ceases. A few drops of hartshorn (aqua ammonia) may be given in water, or a glass or two of wine may be taken. The sting may be removed by pressing over it the barrel of a small watch-key.

POISONOUS SERPENTS, RABID DOGS.

Apply a tight ligature above the bite. Remove the bitten part with the knife, letting it bleed after being well washed with warm water. Cauterize with red or white hot iron or lunar caustic, then cover with lint dipped in volatile liniment (hartshorn and olive oil). Remove the ligature if much inflammation ensues. Induce perspiration, keep the patient warm in bed, and give whiskey occasionally. The after treatment must be governed by the symptoms. There is no known specific treatment for Hydrophobia.

TABLES.

APOTHECARIES' FLUID MEASURE.

IN GENERAL USE IN THE U. S.

Sixty minims or drops make one fluid drachm (f. ʒi).
Eight fluid drachms make one fluid ounce (f. ℥i).
Sixteen fluid ounces make one pint (o. i).
Eight pints make one gallon (c. i).
In practice, the letter "f" is generally omitted from the sign.
Also the letters "ch," in the word drachm are often omitted.

APPROXIMATE MEASURES.

The following rule, although not exact, is considered safe for general domestic practice:—

Sixty drops equal one teaspoonful, or one fluid drachm.
One teaspoonful equals one fluid drachm, or sixty drops.
Four teaspoonfuls equal one tablespoonful, or half a fluid ounce.
Half a fluid ounce equals one tablespoonful, or four teaspoonfuls.
Two tablespoonfuls equal one fluid ounce, or eight teaspoonfuls.
One fluid ounce equals two tablespoonfuls.
A teacupful equals four fluid ounces.
A wine-glassful equals one-half gill, or two fluid ounces.

APOTHECARIES' WEIGHTS.

Twenty grains (gr. xx.) make one scruple (℈ i).
Three scrupels make one drachm (ʒ i).
Eight drachms make one ounce (℥ i).
Twelve ounces make one pound (℔ i).

The Troy pound contains 5760 grains. The avoirdupois pound contains 7000 grains. To make the avoirdupois ounce equal the Troy, add 42½ grains. To reduce the avoirdupois pound to Troy, deduct 1240 grains.

TABLE OF SIGNS AND ABBREVIATIONS.

℞	Recipe.	Take.	Collyr.	Collyrum.	An eye-water.
āā	Ana.	Of each.	Cong.	Congius vel	A gallon or gal-
℔	Libra vel libræ.	A pound or		congii.	lons.
		pounds.	Decoct.	Decoctum.	A decoction.
℥	Uncia vel unciæ.	An ounce or	Ft.	Fiat.	Make.
		ounces.	Garg.	Gargarysma.	A gargle.
ʒ	Drachma vel	A drachm or	Gr.	Granum vel	A grain or
	Drachmæ.	drachms.		grana.	grains.
℈	Scrupulus vel	A scruple or	Gtt.	Gutta vel guttæ.	A drop or drops.
	scrupuli.	scruples.	Haust.	Haustus.	A draught.
O	Octarius vel oc-	A pint or pints.	Infus.	Infusum.	An infusion.
	tarii.		M.	Misce.	Mix.
f℥	Fluiduncia vel	A fluid ounce or	Mass.	Massa.	A mass.
	fluidunciæ.	fluid ounces.	Mist.	Mistura.	A mixture.
fʒ	Fluidrachma vel	A fluidrachm or	Pil.	Pilula vel	A pill or pills.
	fluidrachmæ.	fluidrachms.		pilulæ.	
♏	Minimum vel	A minim or	Pulv.	Pulvis vel pul-	A powder or
	minima.	minims.		veres.	powders.
Chart	Chartula vel	A small paper	Q. S.	Quantum suffi-	A sufficient
	chartulæ.	or papers.		cit.	quantity.
Coch.	Cochlear vel	A spoonful or	S.	Signa.	Write.
	cochlearia.	spoonsfuls.	Ss.	Semis.	A half.

GAUBIUS' TABLE,

OR PROPORTIONAL DOSES ACCORDING TO AGE.

For an adult suppose the dose to be 1 or 1 dram.

Under 1 year will require 1-12 or 5 grains.
" 2 years " " 1-8 " 8 "
" 3 " " " 1-6 " 10 "
" 4 " " " 1-4 " 15 "
" 7 " " " 1-3 " 1 scruple.
" 14 " " " 1-2 " 1-2 dram.
" 20 " " " 2-3 " 2 scruples.
From 21 to 60 the full dose, or 1 or 1 dram

Above this age, an inverse gradation must be observed.

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Geo. C. Goodwin & Co., Boston, Mass.
Gilman Bros , Boston, Mass.
Rust Bros., & Bird, Boston, Mass.
Geo. W. Swett, Boston, Mass.
Smith, Doolittle & Smith, Boston, Mass.
Weeks & Potter, Boston, Mass.
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W. F. Phillips & Co., Portland, Me.
W. L. Alden & Co., Bangor, Me.
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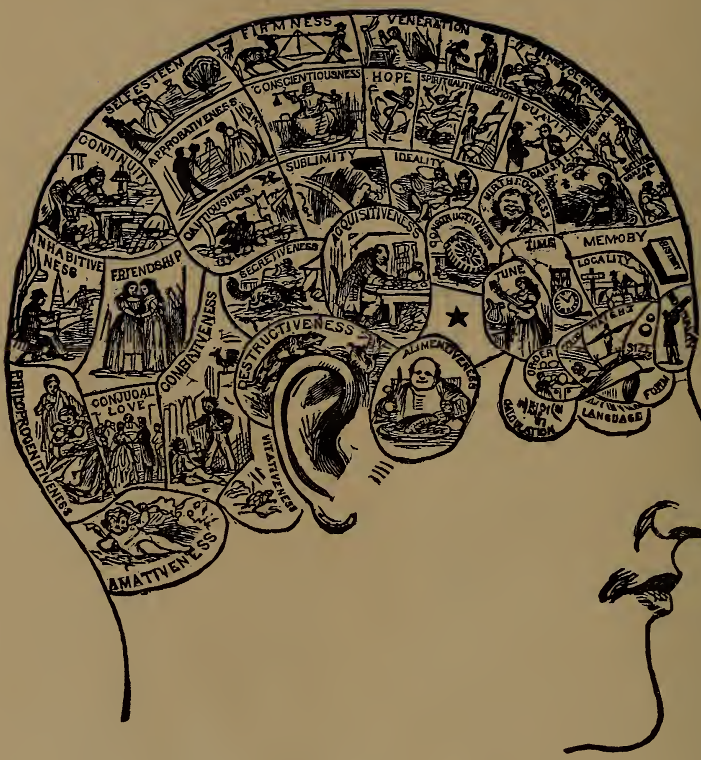
FIRMNESS
VENERATION
SELF ESTEEM
CONSCIENTIOUSNESS
HOPE
CONTINUITY
APPROBATIVENESS
SUBLIMITY
IDEALITY
CAUTIOUSNESS
ACQUISITIVENESS
MIRTHFULNESS
MEMOBY
TIME
LOCALITY
TUNE
SECRETIVENESS
FRIENDSHIP
COMBATIVENESS
DESTRUCTIVENESS
CONJUOAL LOVE
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SIZE
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LANGUAGE
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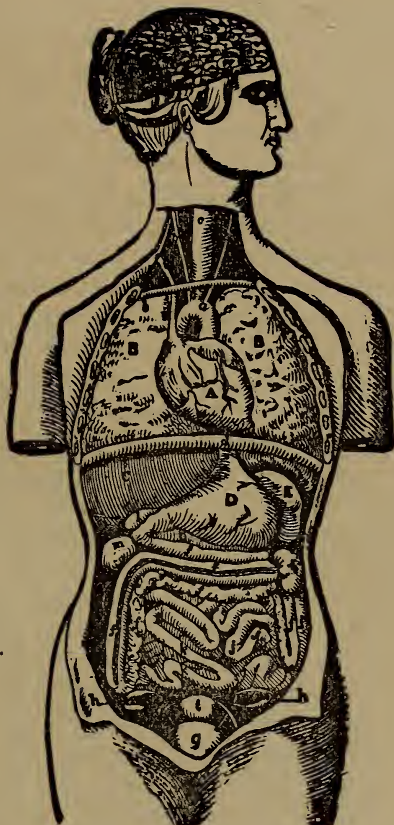

A—Heart.

B—Lungs.

C—Liver.

D—Stomach.

E—Spleen.

FF—Colon.

G—Bladder.

H—Ureters.

I—Uterus.

J—Jejunum.

K—Ileum.

L—Gall Bladder.

M—Kidneys.

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